

ANEXO I

RELATÓRIO DOS LEVANTAMENTOS



LHT

HIDROPROJECTO SA

**LEVANTAMENTO TOPOHIDROGRÁFICO
NA ILHA DA CULATRA**

NOVEMBRO DE 2003



Assunto : LEVANTAMENTO TOPOHIDROGRÁFICO NA ILHA DA CULATRA;

Junto se envia o relatório final de trabalho referente ao levantamento topohidrográfico na Ilha da Culatra, efectuado em Novembro de 2003.

Com os melhores cumprimentos,



António Ferreira

1 - O levantamento topohidrográfico na Ilha da Culatra, foi efectuado no dia 10 de Novembro de 2003, sendo o planeamento do mesmo baseado na planta fornecida pela Hidroprojecto. A escala deste trabalho é 1/1000, sendo a distancia entre fiadas de 20mts.

2 - Reconhecimento:

Foi feito o reconhecimento da zona que serviu de apoio ao levantamento, tendo-se coordenado um ponto na ponta cais da Culatra, com as seguintes coordenadas:

$$X = 225\ 859.49 \quad Y = 3\ 435.37 \quad \text{cota} = 4,53\text{mts ao Zh}$$

3 - Apoio Horizontal

3.1 Origem Geodésica
Castelo de S. Jorge

3.2 Elipsóide
Hayford (Internacional)

3.3 Sistema de projecção
Gauss

3.4 Sistema de Coordenadas
Rectangulares de Gauss (Militares)

3.5 Elipsóide de trabalho
WGS - 84

3.6 Triangulação local
Foram utilizadas no apoio à sondagem coordenadas rectangulares Datum Lisboa.

4. Sondagem

4.1 - Esquema de cobertura:

Toda a área navegável foi coberta por fiadas espaçadas de 20mts.
Foi efectuada uma fiada de verificação.



LHT

4.2 - Execução da sondagem.

Para a execução da sondagem foi utilizada uma embarcação de fibra de vidro, equipada com um sondador ultra sonoro EA Sea Sound 103. Esta foi guiada ao longo das fiadas previamente planeadas e visualizadas num ecrã de um computador portátil 486 DX2, tendo sido registadas em simultâneo duas posições e dez sondagens por segundo.

A velocidade do som na água foi de 1495 m/seg.

O posicionamento foi assegurado por DGPS da Trimble (4000RS/DS), com a precisão de 0 a 10 centímetros.

5 - Processamento da sondagem.

5.1 - O processamento da sondagem foi efectuado com auxílio de software hidrográfico sendo toda a digitalização revista fiada a fiada, com o auxílio do rolo da sonda, para uma maior precisão.

5.2 - Redução da sondagem.

Os valores de sondagem estão referidos ao ao Zero Hidrográfico, situado a 2,00mts abaixo do nível médio.

5.3 - Redacção da sondagem.

A redacção da sondagem foi efectuada numa prancheta de película indeformável (cronaflex), com as seguintes características:

LHT 25/03 à escala 1/1000 em que o canto inferior esquerdo tem como coordenadas:

$$X=225\ 700 \quad Y=3\ 200$$

5.4 - Batimétricas

Foram traçadas batimétricas de metro a metro.

6 - Marés

Foram efectuadas alturas de água de dez em dez minutos a partir de uma marca do Instituto Hidrográfico (BH1/01), situada no topo da ponte cais lado Oeste, com a cota 4.530mts ao Zh. Nivelamento geométrico efectuado em Julho de 2001.

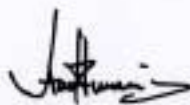
7 - Topografia

Foi efectuada topografia de completagem e definida a linha do preia-mar. Definição topográfica da ponte cais assim como a cota de soleira da igreja.
Traçadas curvas de nível de metro a metro.

8 - Considerações finais.

O levantamento foi efectuado no dia 10 de Novembro, com boas condições de tempo, vento do quadrante oeste com força 2.
A velocidade média da embarcação foi de 2.2 nós.

L. H. T. , Novembro de 2003.



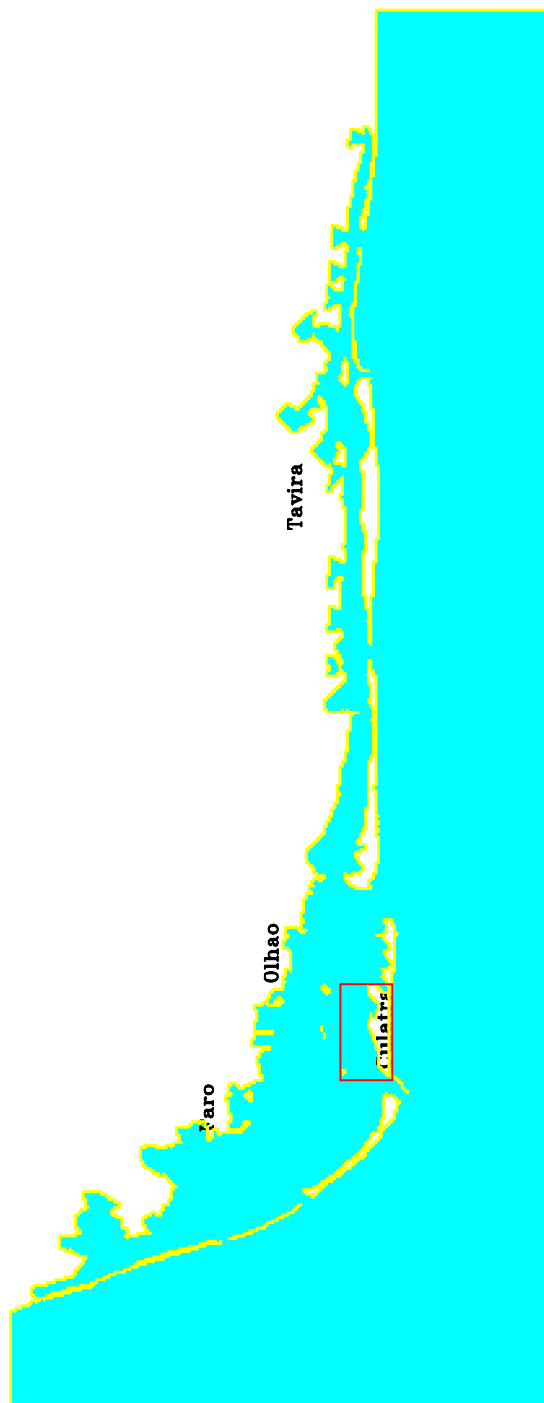
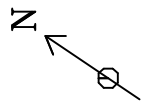
António Ferreira

ANEXO II

RESULTADOS RELATIVOS À DINÂMICA LITORAL

- Modelação Matemática
- Transporte Litoral
- Acumulação Sedimentar

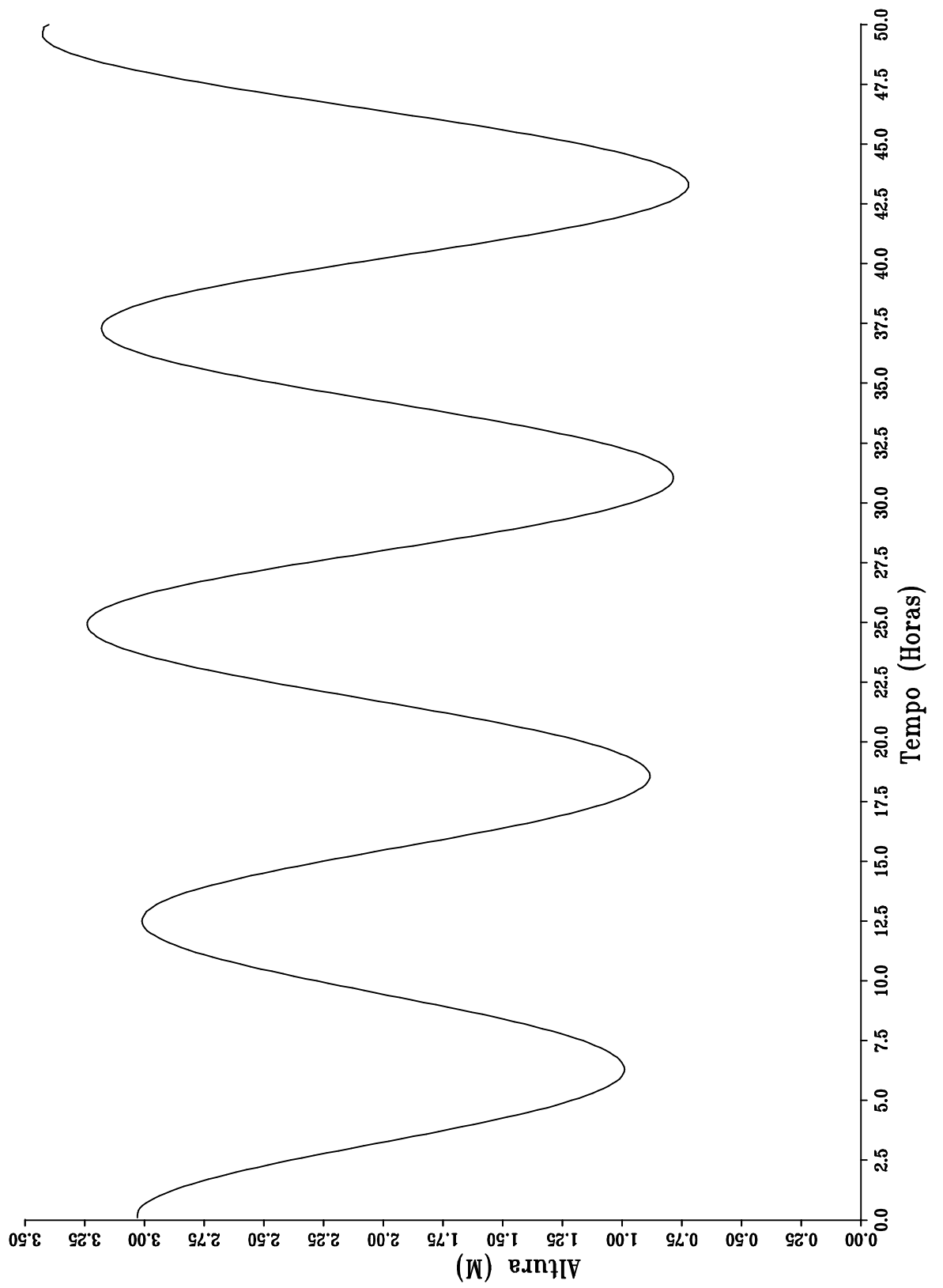
Modelação Matemática



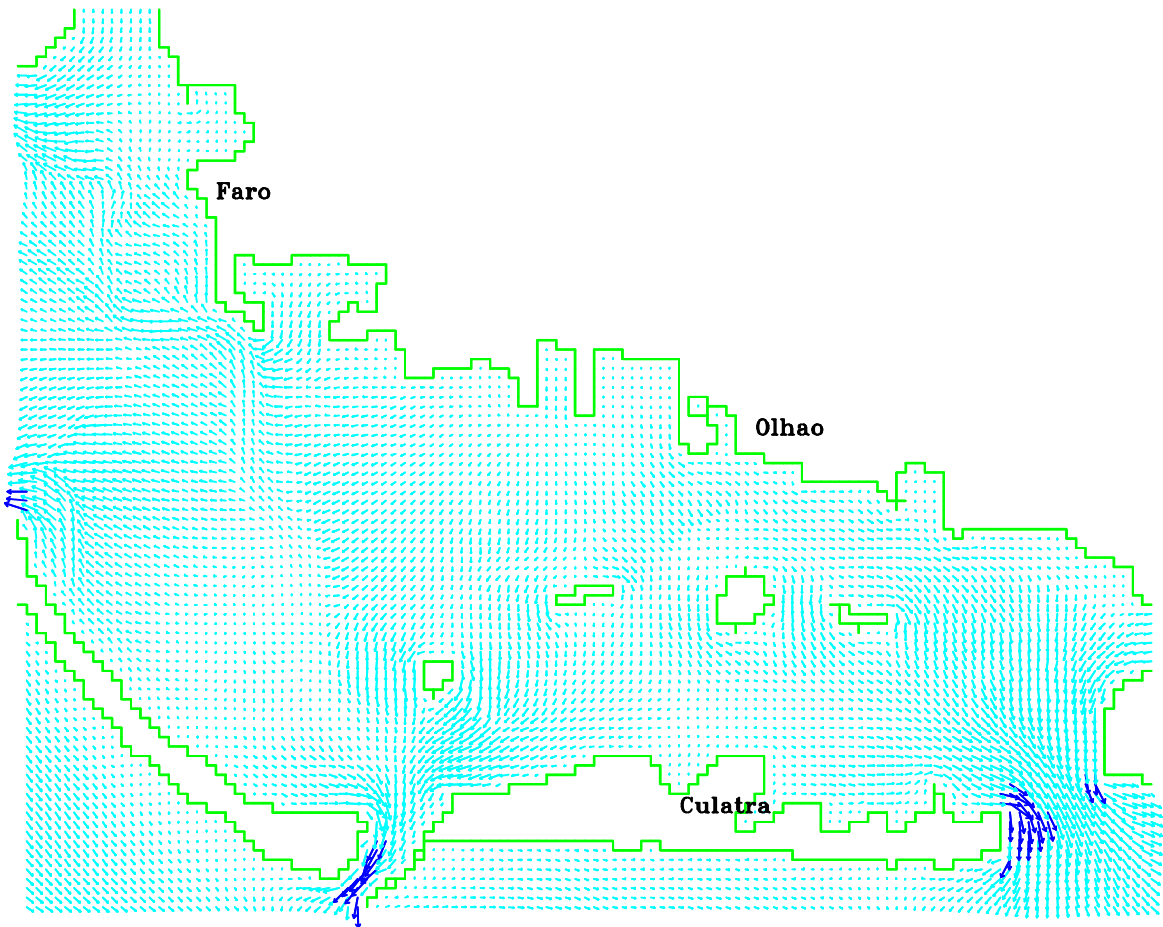
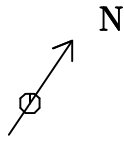
0.0 10000.0m

Modelo Bidimensional da Ria Formosa
Dominio de Calculo e Encaixe do Sub-Modelo
Malha: 100x100m; Nmax=208 Mmax=540

Fig. - 1



Modelo Bidimensional da Ria Formosa
 Alturas de Agua
 Condicao de Fronteira Oceanica



Velocidades (m/s)

- [0.00,0.25[
- [0.25,0.50[
- [0.50,1.00[
- >= 1.00

Tempo de Simulacao: 38.00 Horas

1.00 m/s
→

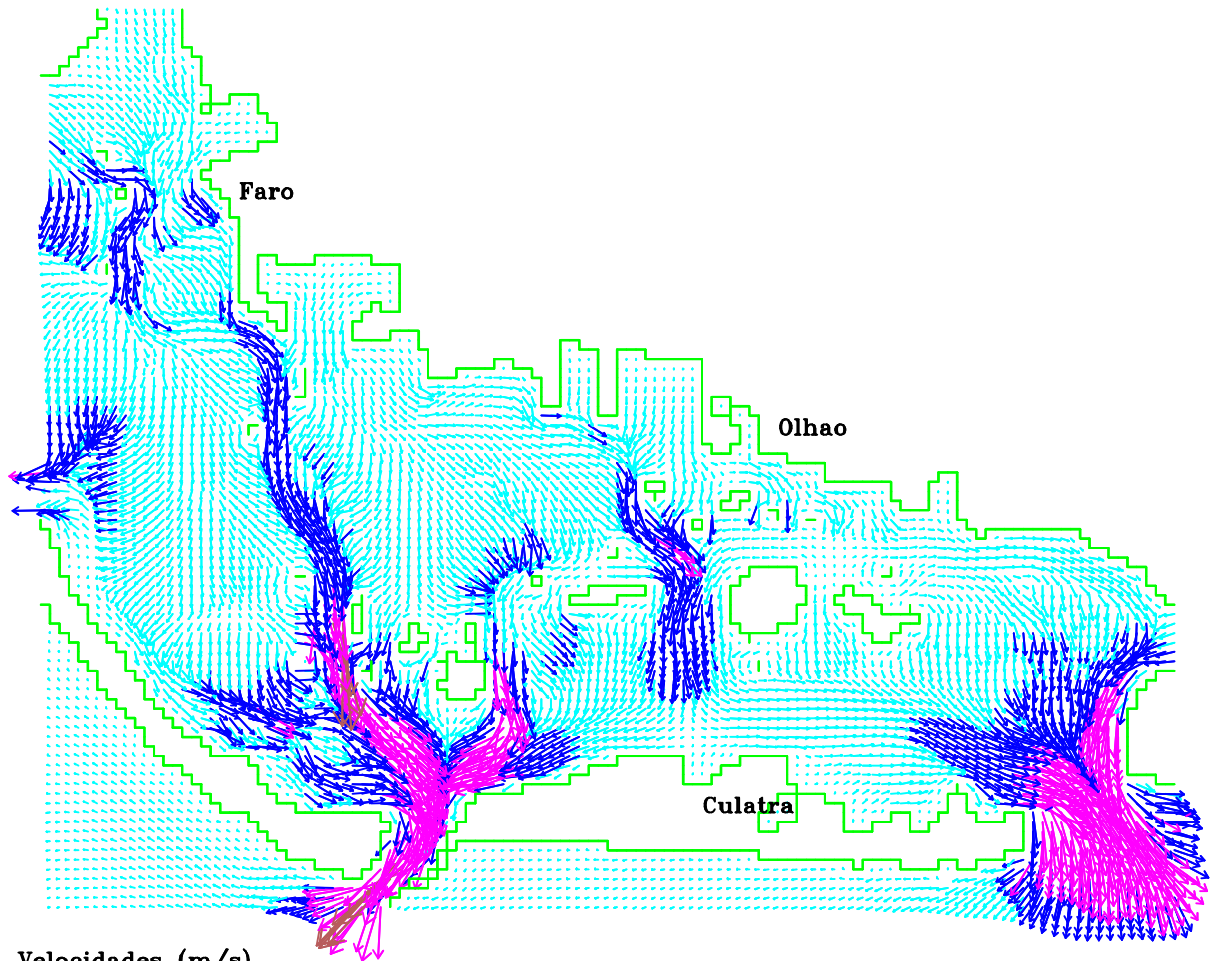
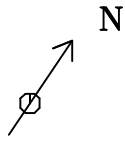
0. 1000.m
▬

Modelo Bidimensional da Ria Formosa

Campo da Velocidade

Fase da Mare: PM+0.5h

Fig. - 3



Velocidades (m/s)

- [0.00,0.25[
- [0.25,0.50[
- [0.50,1.00[
- >= 1.00

Tempo de Simulacao: 40.00 Horas

1.00 m/s



0. 1000.m

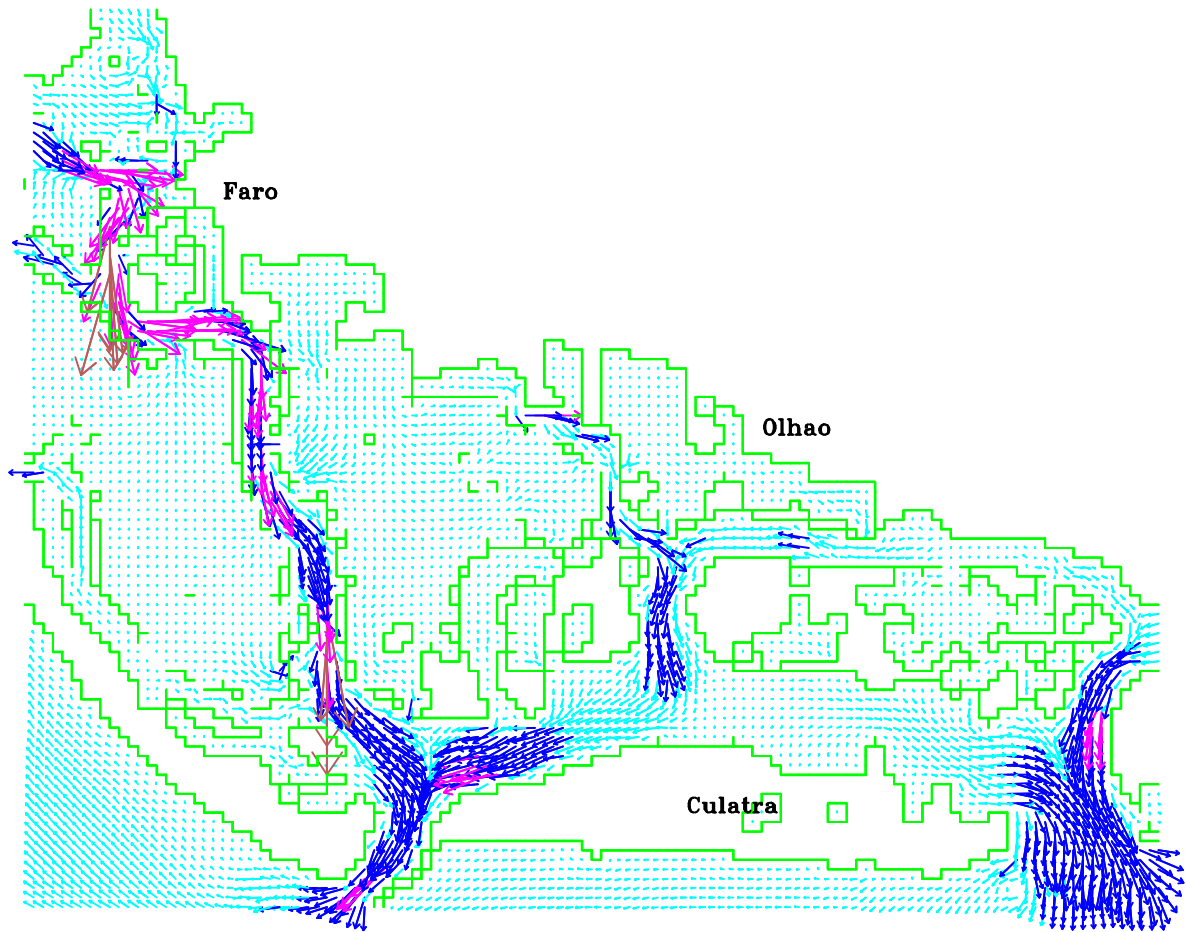
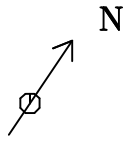


Modelo Bidimensional da Ria Formosa

Campo da Velocidade

Fase da Mare: PM+2.5h

Fig. - 4



Velocidades (m/s)

- [0.00,0.25[
- [0.25,0.50[
- [0.50,1.00[
- >= 1.00

Tempo de Simulacao: 42.00 Horas

1.00 m/s
→

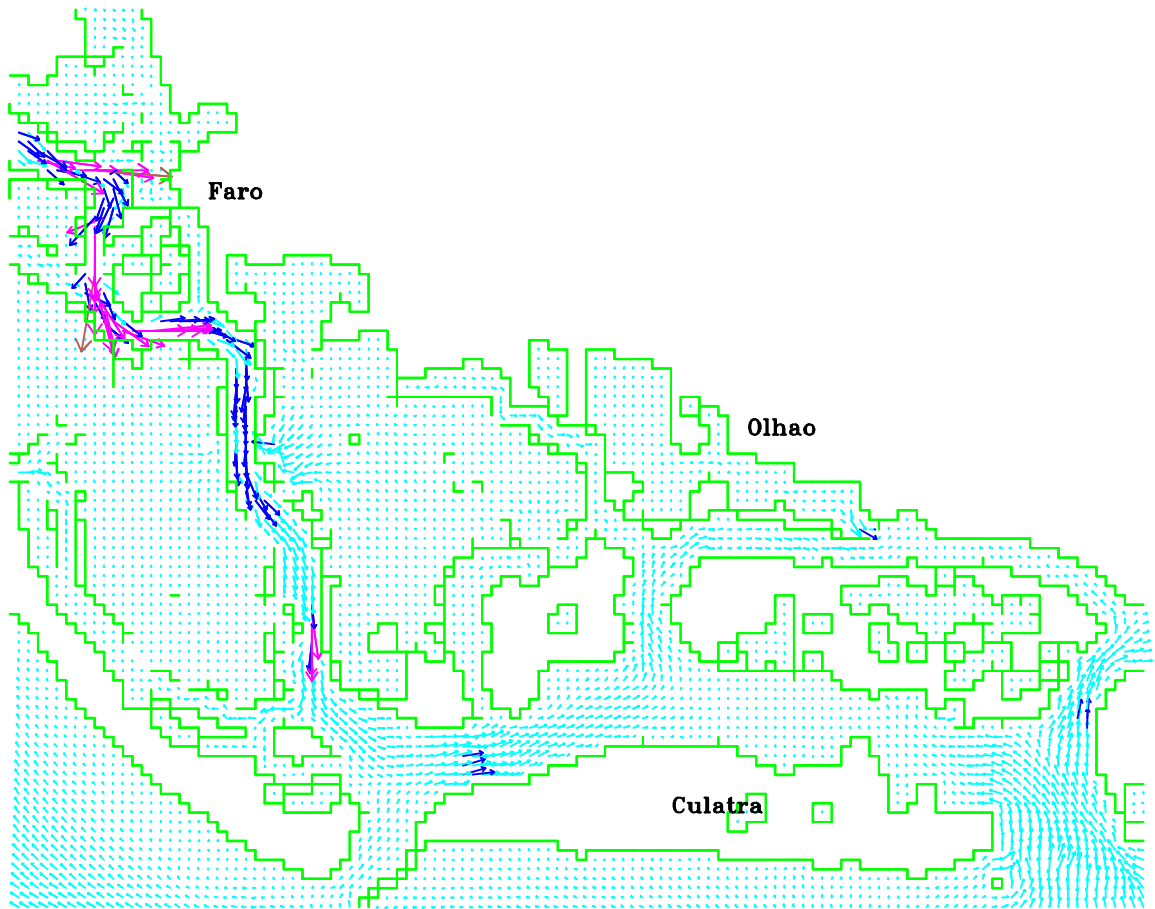
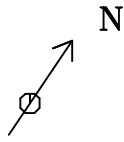
0. 1000.m
—

Modelo Bidimensional da Ria Formosa

Campo da Velocidade

Fase da Mare: BM-1.0h

Fig. - 5



Velocidades (m/s)

- [0.00, 0.25[
- [0.25, 0.50[
- [0.50, 1.00[
- >= 1.00

Tempo de Simulacao: 44.00 Horas

1.00 m/s
→

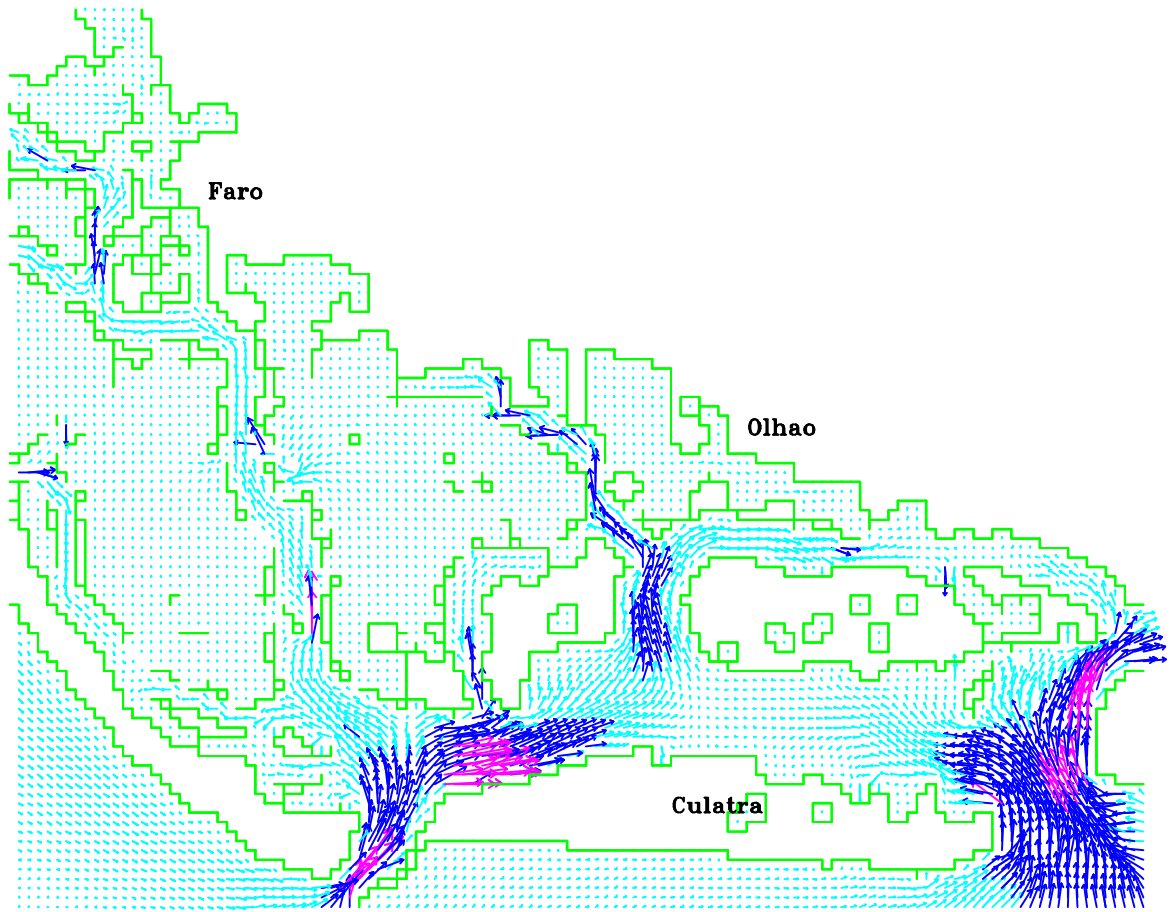
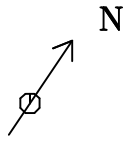
0. 1000.m
—

Modelo Bidimensional da Ria Formosa

Campo da Velocidade

Fase da Mare: BM+1.0h

Fig. - 6



Velocidades (m/s)

- [0.00,0.25[
- [0.25,0.50[
- [0.50,1.00[
- >= 1.00

Tempo de Simulacao: 46.00 Horas

1.00 m/s
→

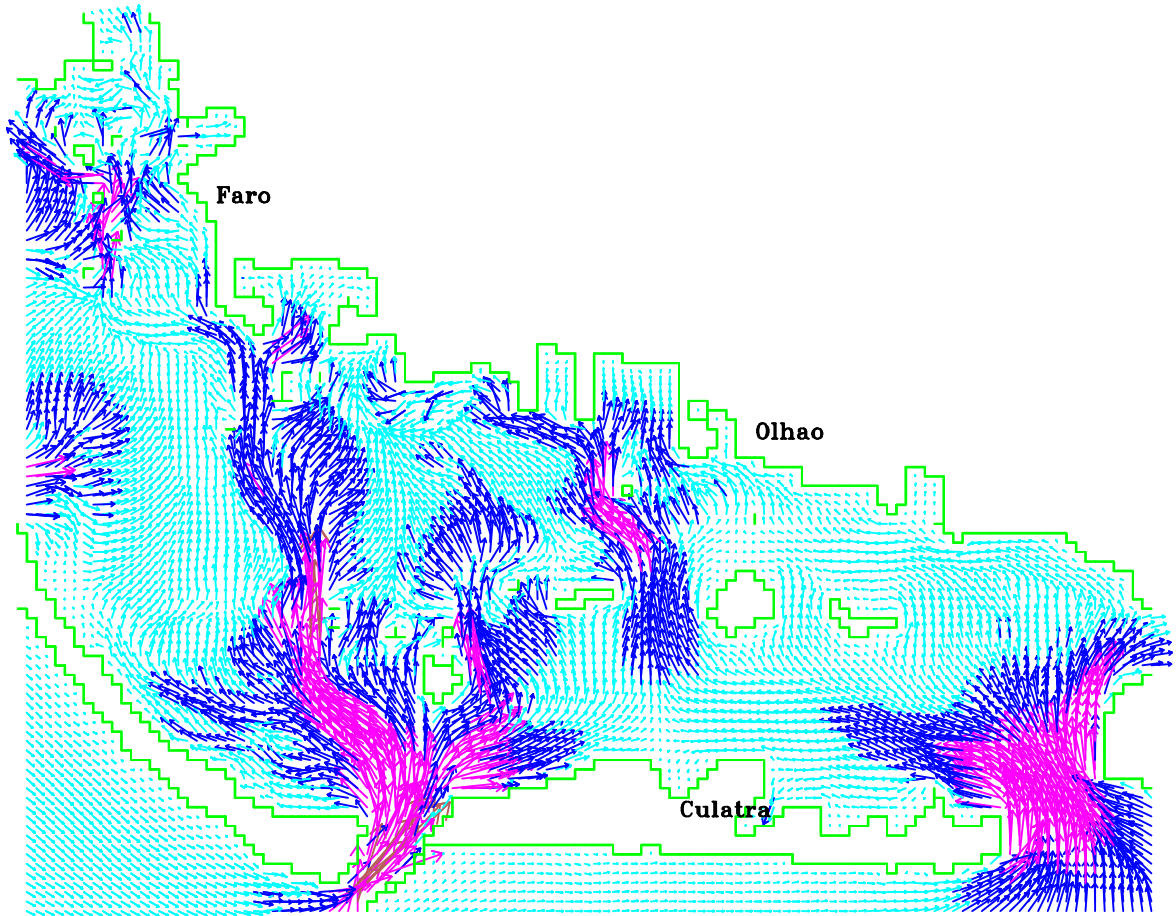
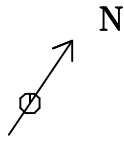
0. 1000.m
▬

Modelo Bidimensional da Ria Formosa

Campo da Velocidade

Fase da Mare: BM+3.0h

Fig. - 7



Velocidades (m/s)

- [0.00,0.25[
- [0.25,0.50[
- [0.50,1.00[
- >= 1.00

Tempo de Simulacao: 48.00 Horas

1.00 m/s
→

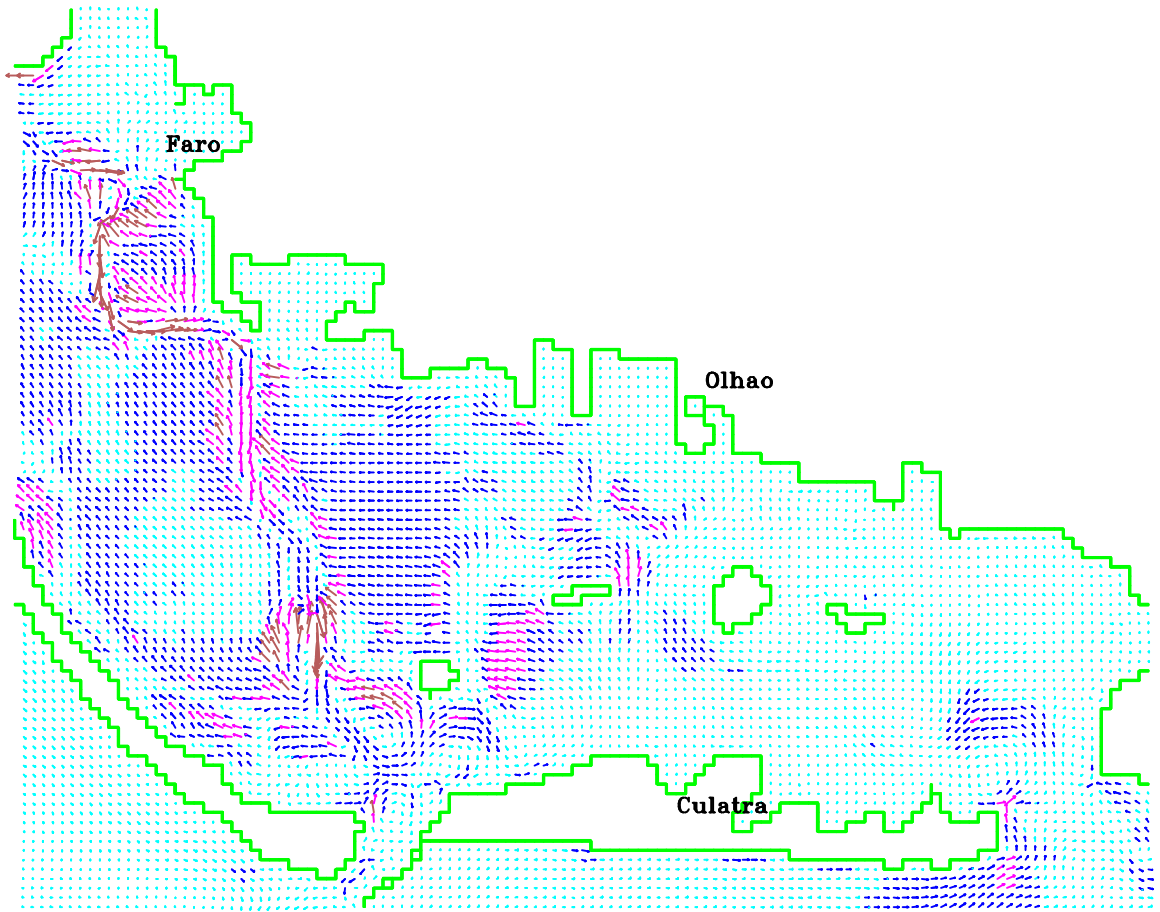
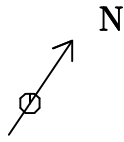
0. 1000.m
▬

Modelo Bidimensional da Ria Formosa

Campo da Velocidade

Fase da Mare: PM-2.0h

Fig. - 8



Velocidades (m/s)

- [0.00,0.03[
- [0.03,0.05[
- [0.05,0.08[
- >=0.08

0.50 m/s
→

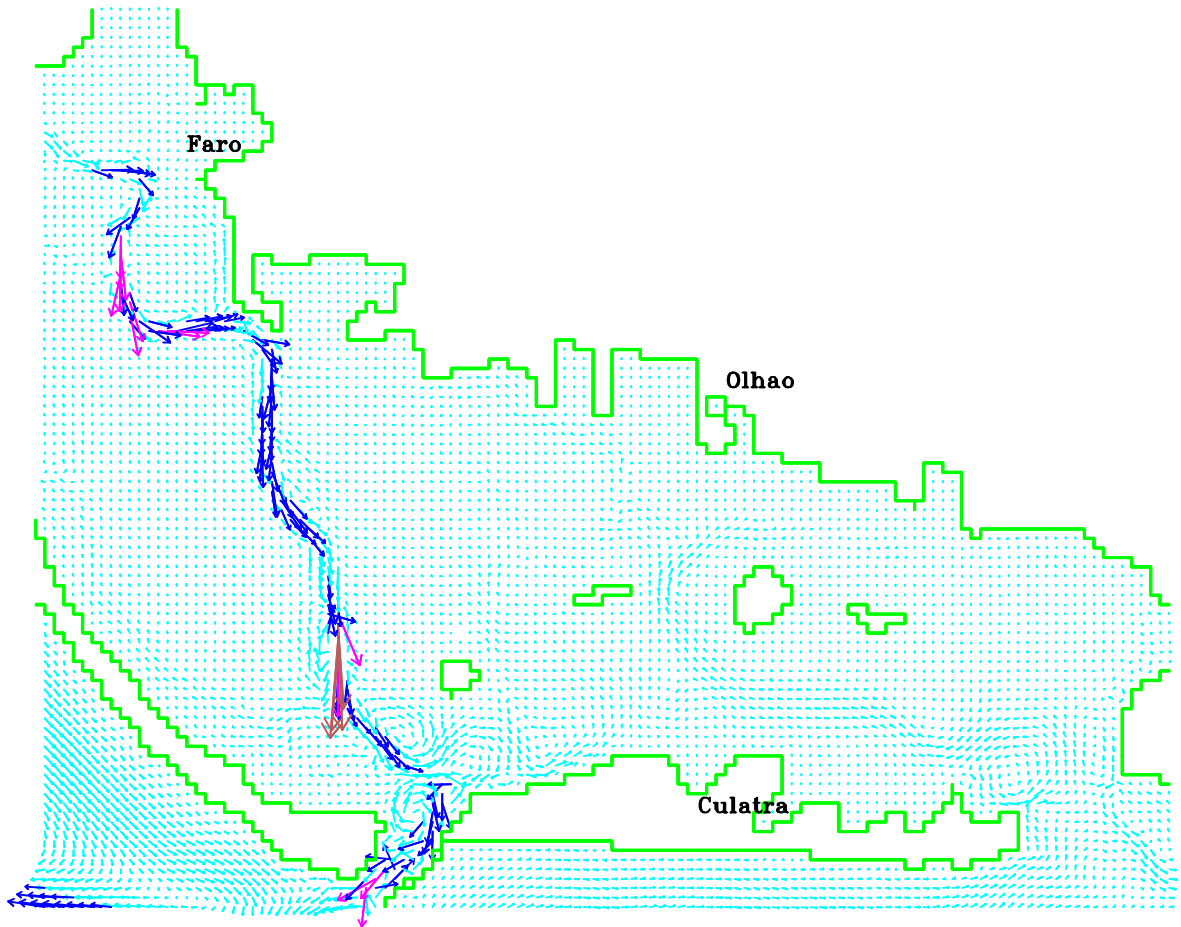
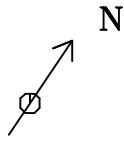
0. 500.m
▬

Modelo Bidimensional da Ria Formosa (100x100)

Campo de Velocidades Residuais

Intervalo de Filtragem: 35 horas

Fig. - 9



Transporte (m^2/s)

- [0.00, 0.25[
- [0.25, 0.50[
- [0.50, 0.75[
- ≥ 0.75

1.00 m^2/s



0. 500.m

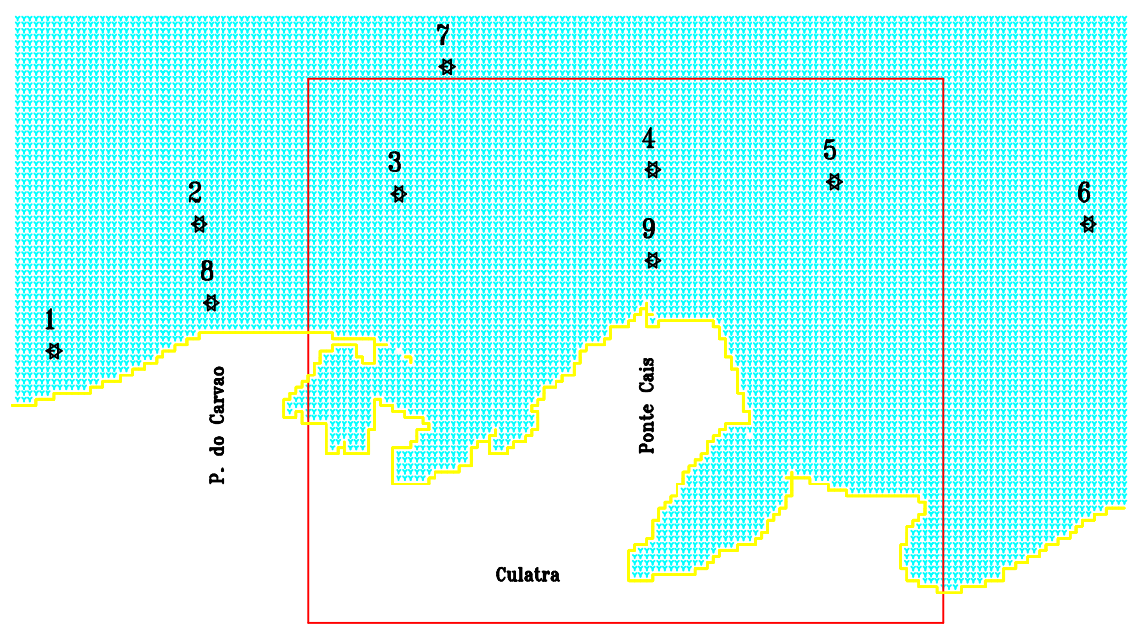
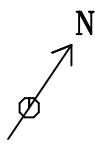


Modelo Bidimensional da Ria Formosa (100x100)

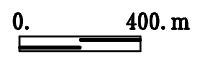
Campo de Transportes Residuais

Intervalo de Filtragem: 35 horas

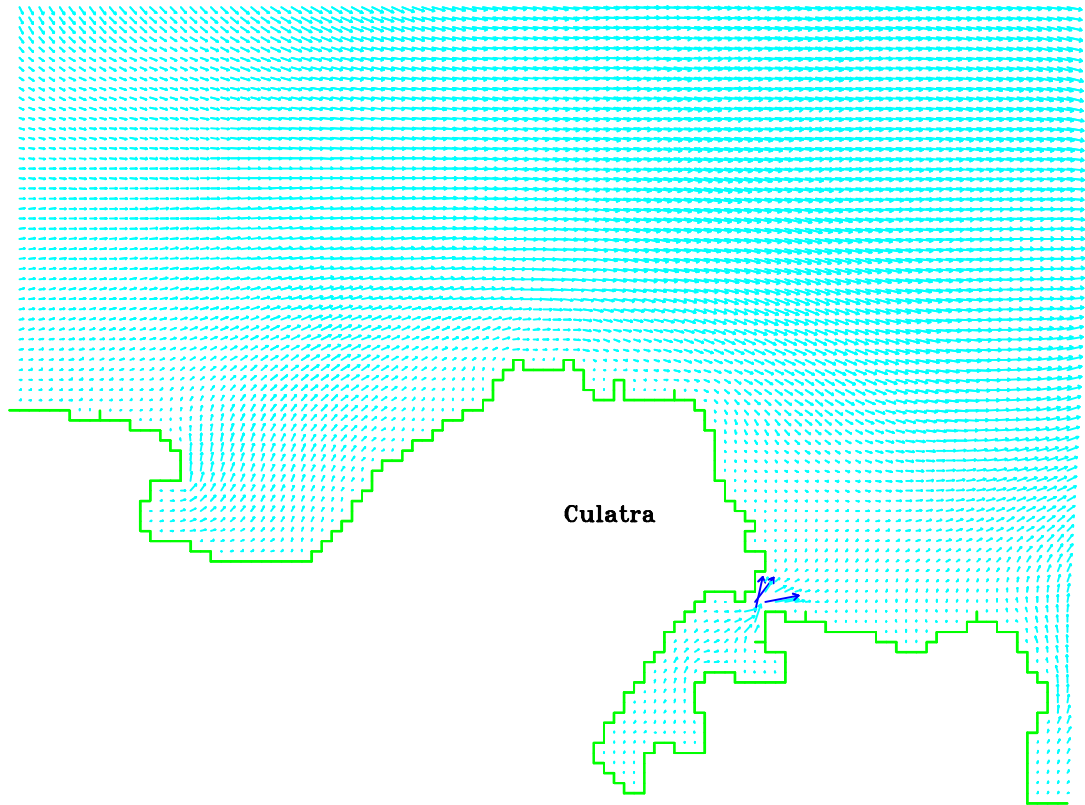
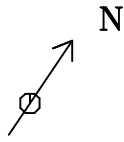
Fig. - 10



Zoom de Representação dos Campos da Velocidade



<p>Sub-Modelo Bidimensional da Culatra Dominio de Calculo e Localizacao das Estacoes de Registo Malha: 20x20m; Nmax=100 Mmax=185</p>	<p>Fig. - 11</p>
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Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 38.00 Horas

0.25 m/s
→

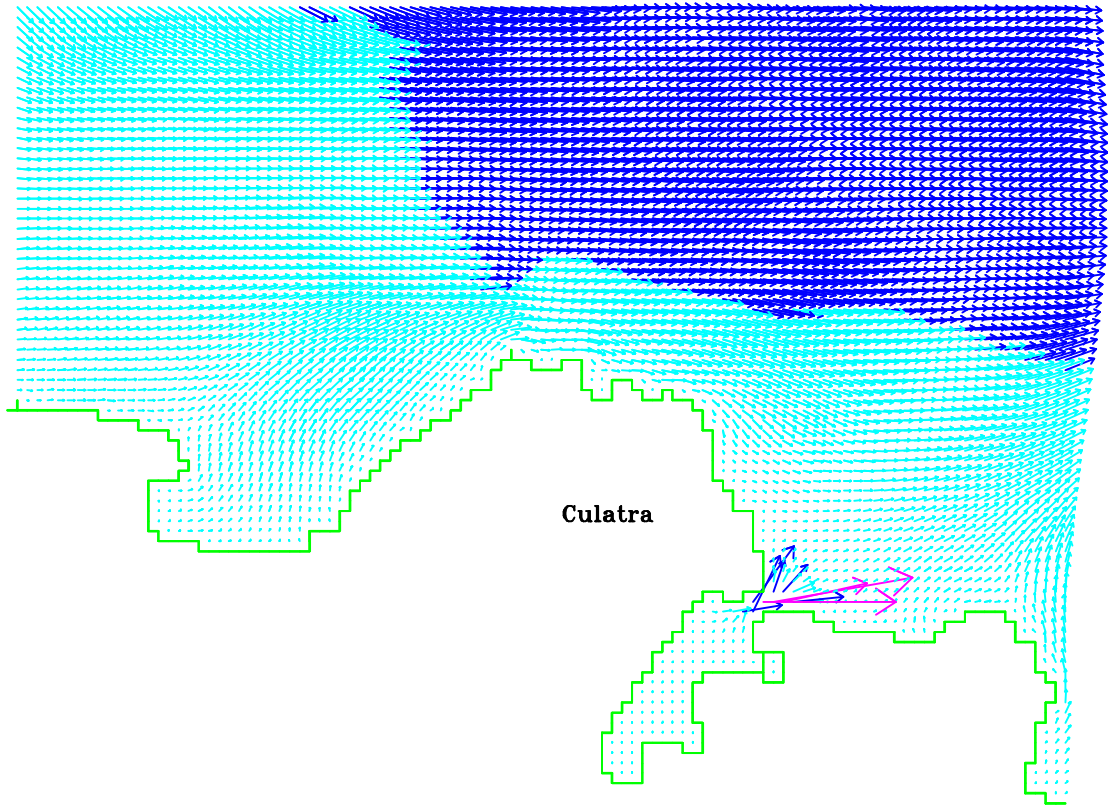
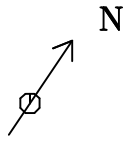
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM+0.5h

Fig. - 12



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 39.00 Horas

0.25 m/s
→

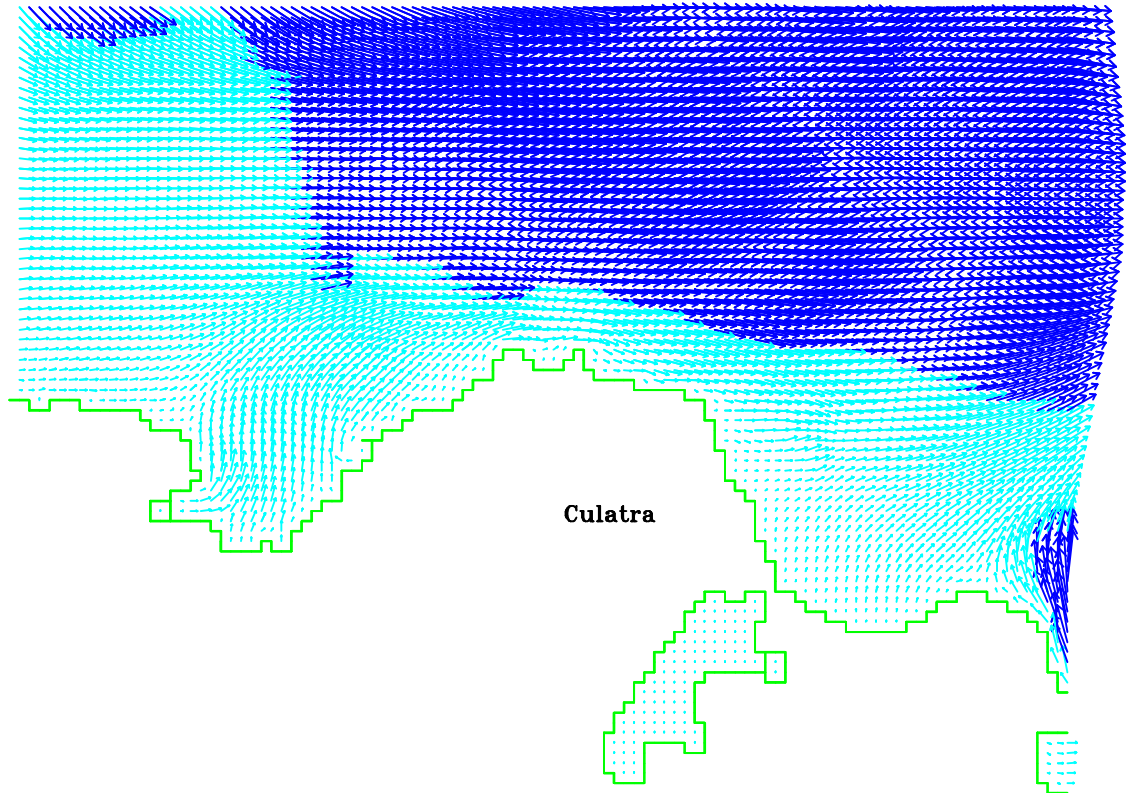
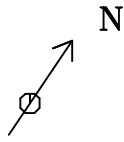
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM+1.5h

Fig. - 13



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 40.00 Horas

0.25 m/s
→

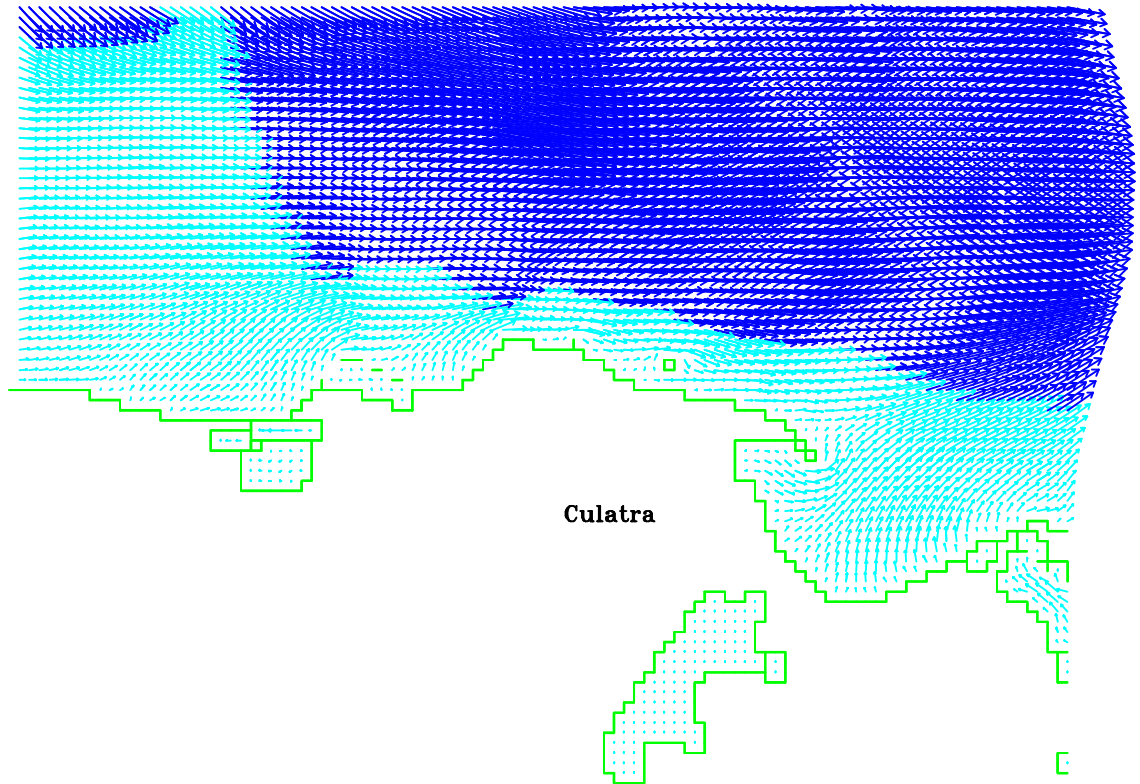
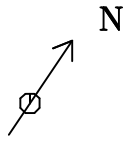
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM+2.5h

Fig. - 14



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 41.00 Horas

0.25 m/s
→

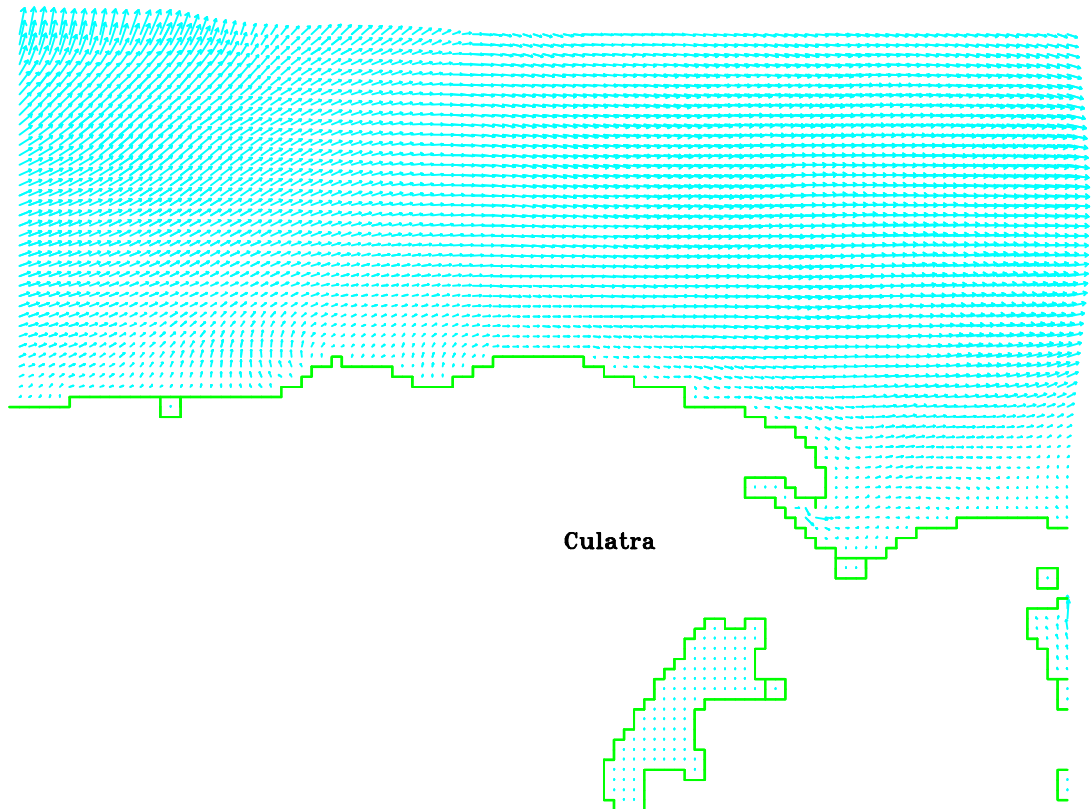
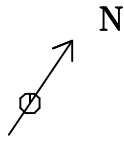
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM+3.5h

Fig. - 15



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 42.00 Horas

0.25 m/s
→

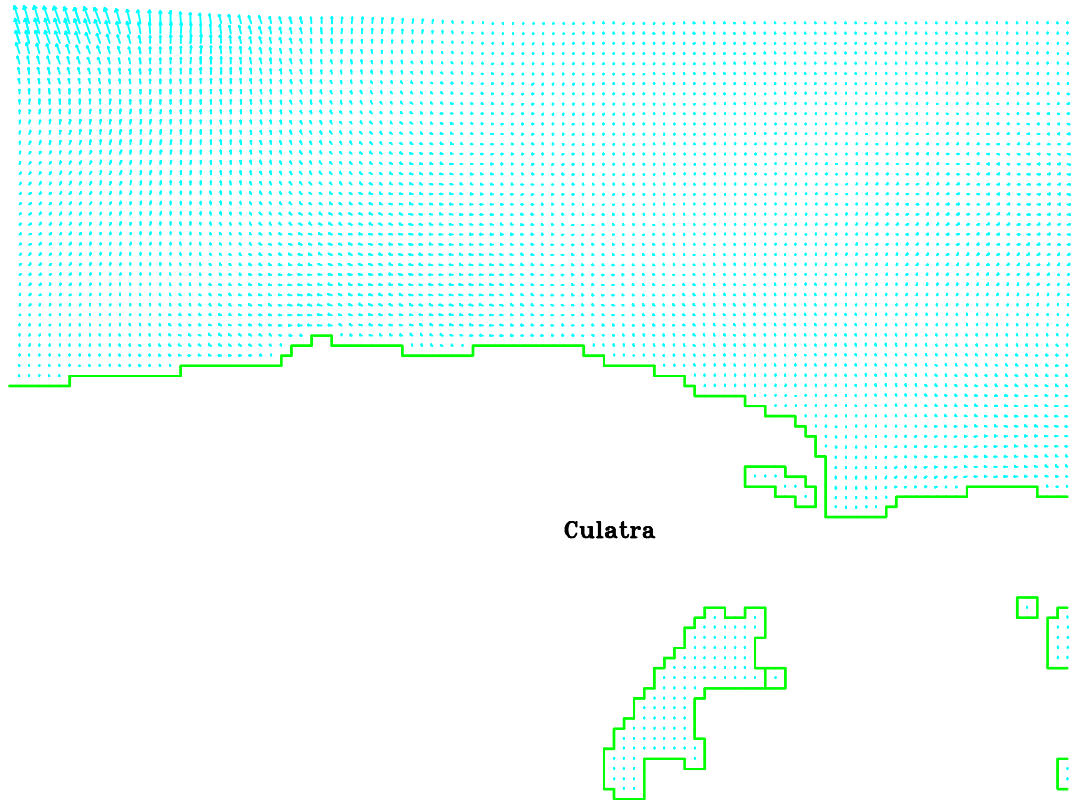
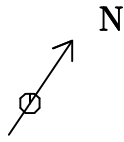
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: BM-1.0h

Fig. - 16



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 43.00 Horas

0.25 m/s
→

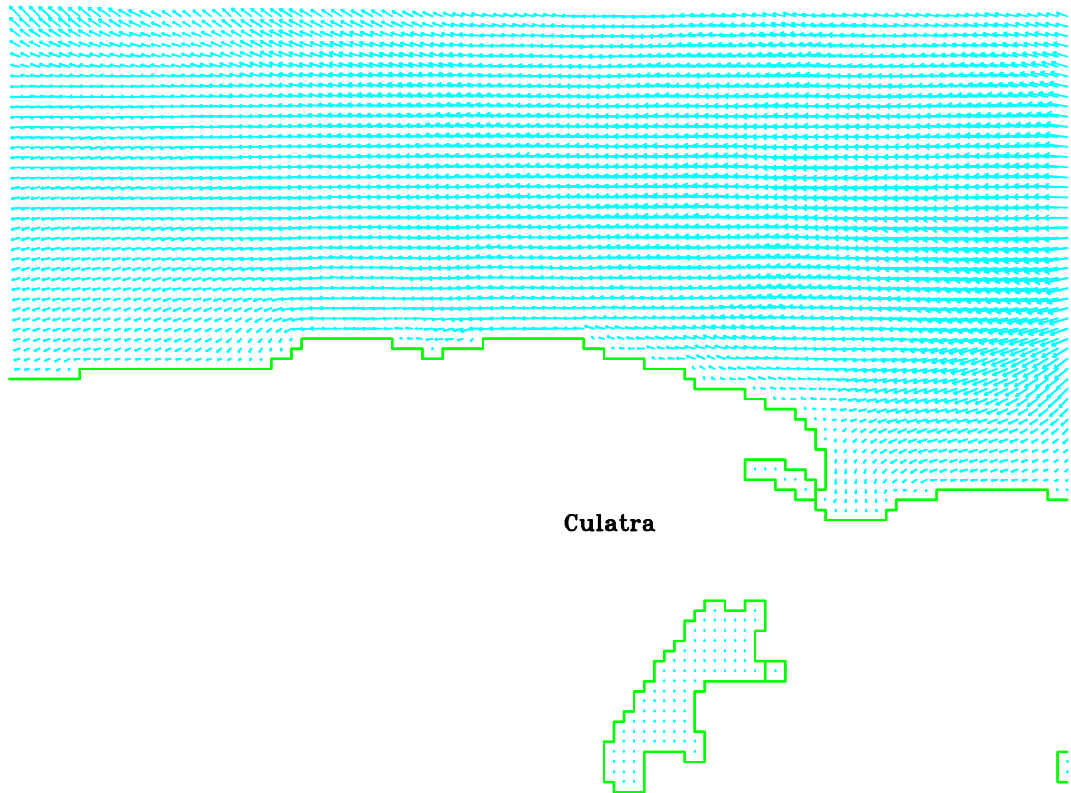
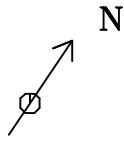
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: BM

Fig. - 17



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 44.00 Horas

0.25 m/s
→

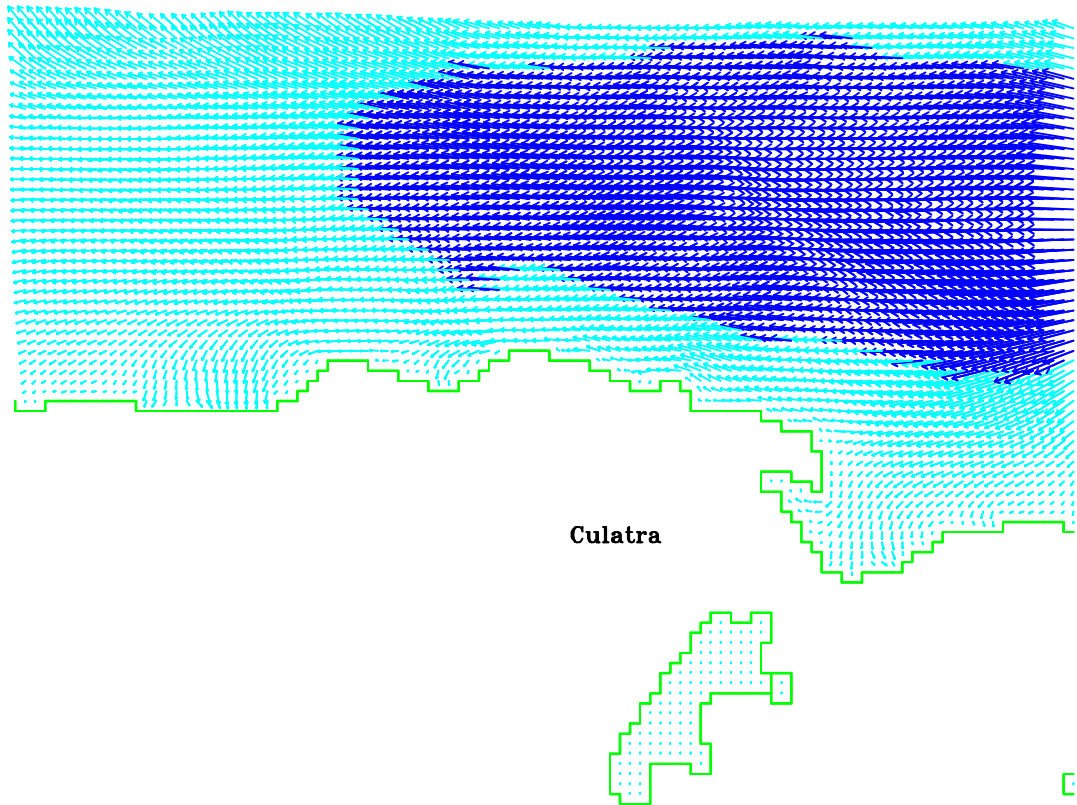
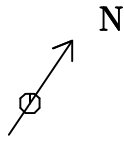
0. 200.m
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Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: BM+1.0h

Fig. - 18



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 45.00 Horas

0.25 m/s
→

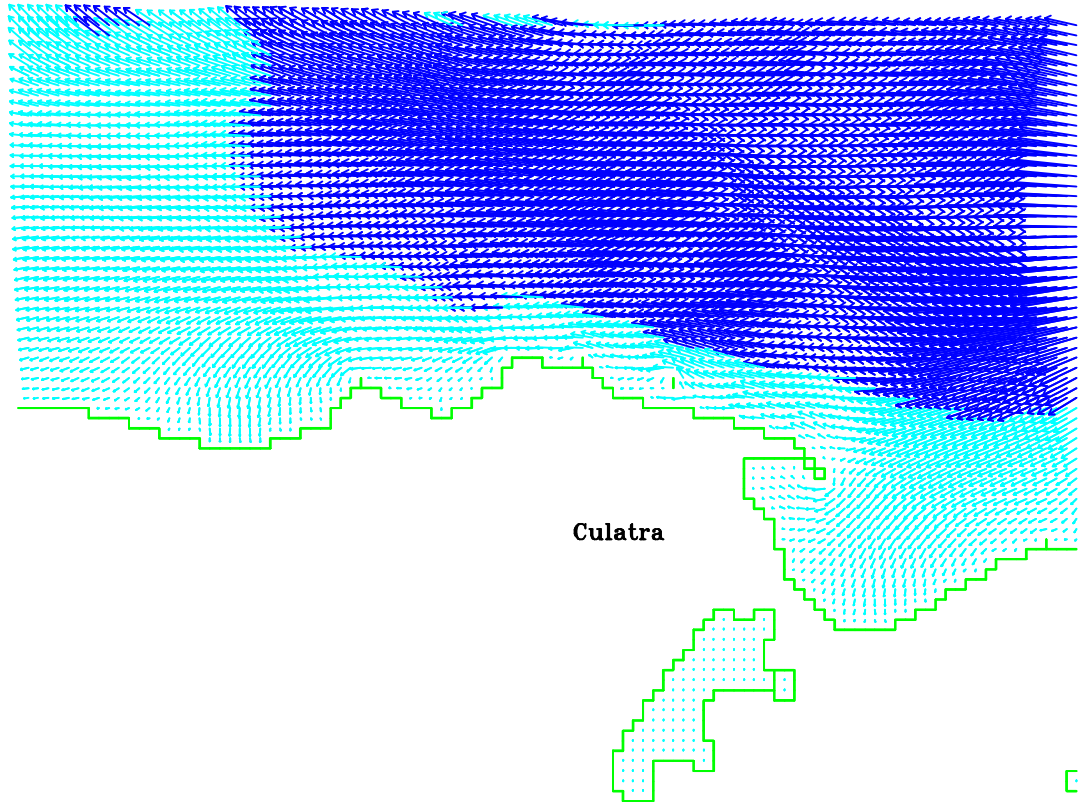
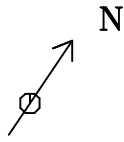
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: BM+2.0h

Fig. - 19



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 46.00 Horas

0.25 m/s
→

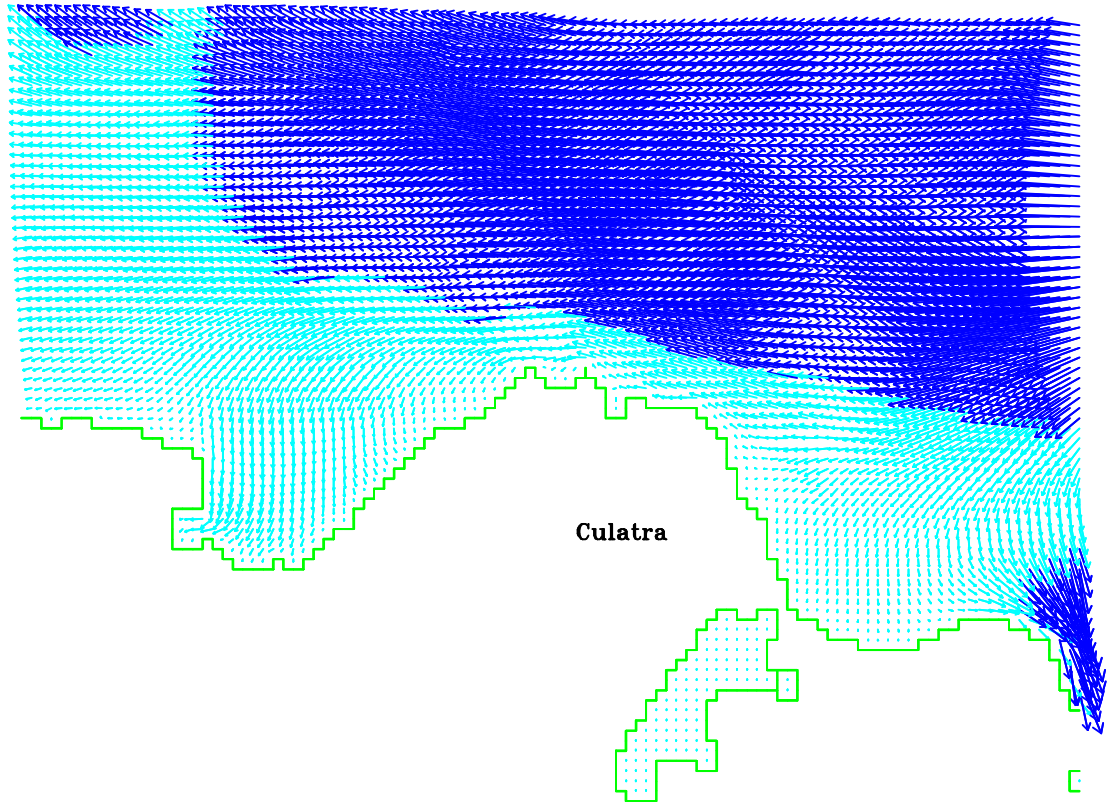
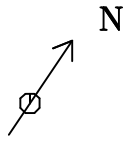
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: BM+3.0h

Fig. - 20



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 47.00 Horas

0.25 m/s
→

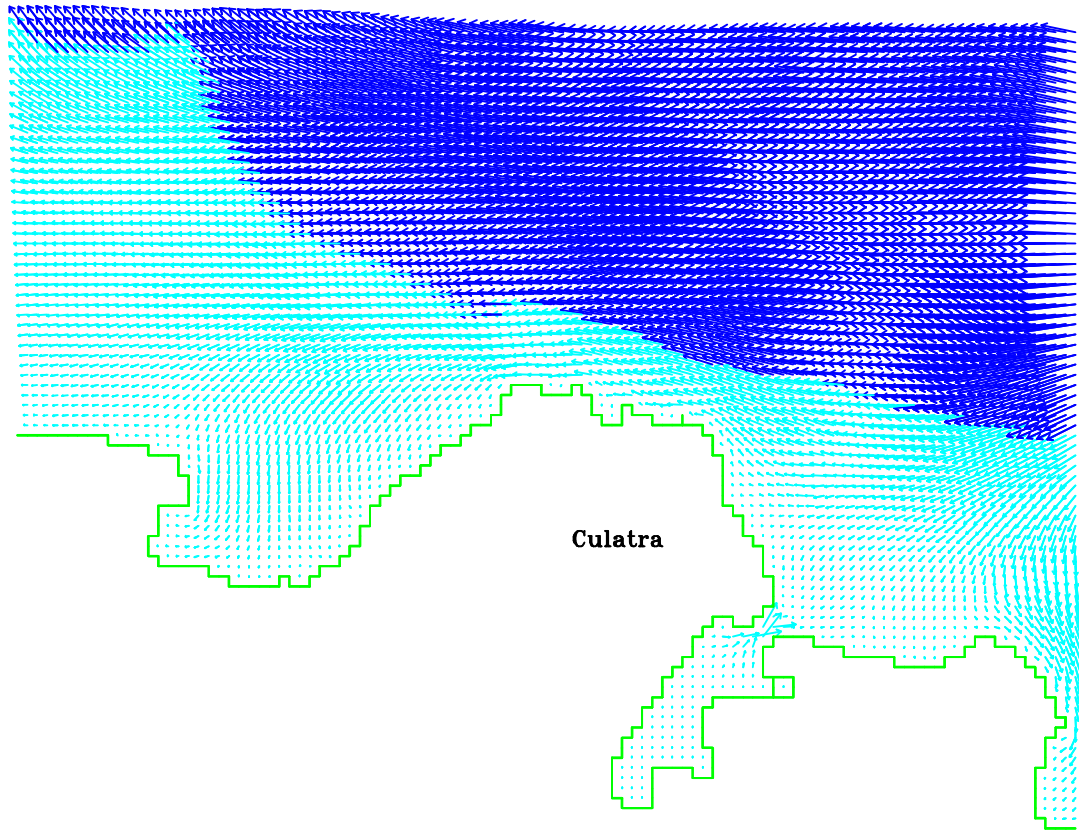
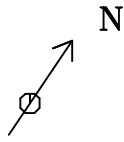
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM-2.5h

Fig. - 21



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 48.00 Horas

0.25 m/s
→

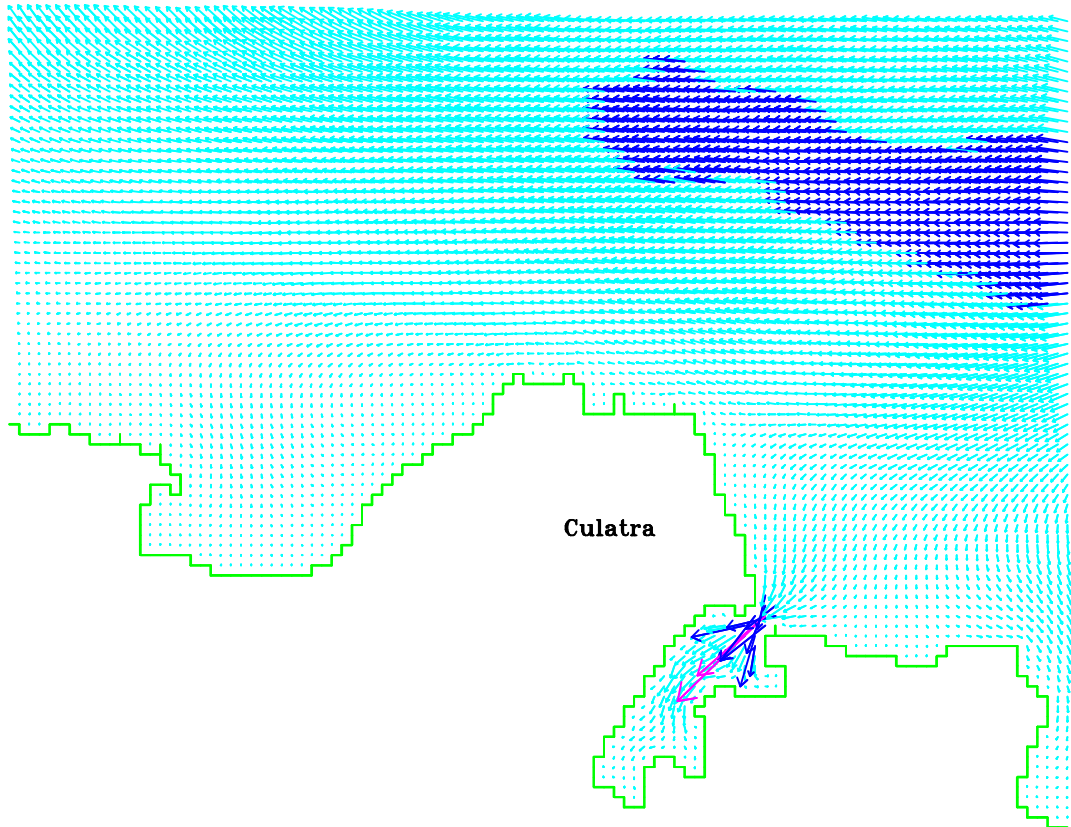
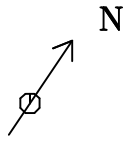
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM-1.5h

Fig. - 22



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 49.00 Horas

0.25 m/s
→

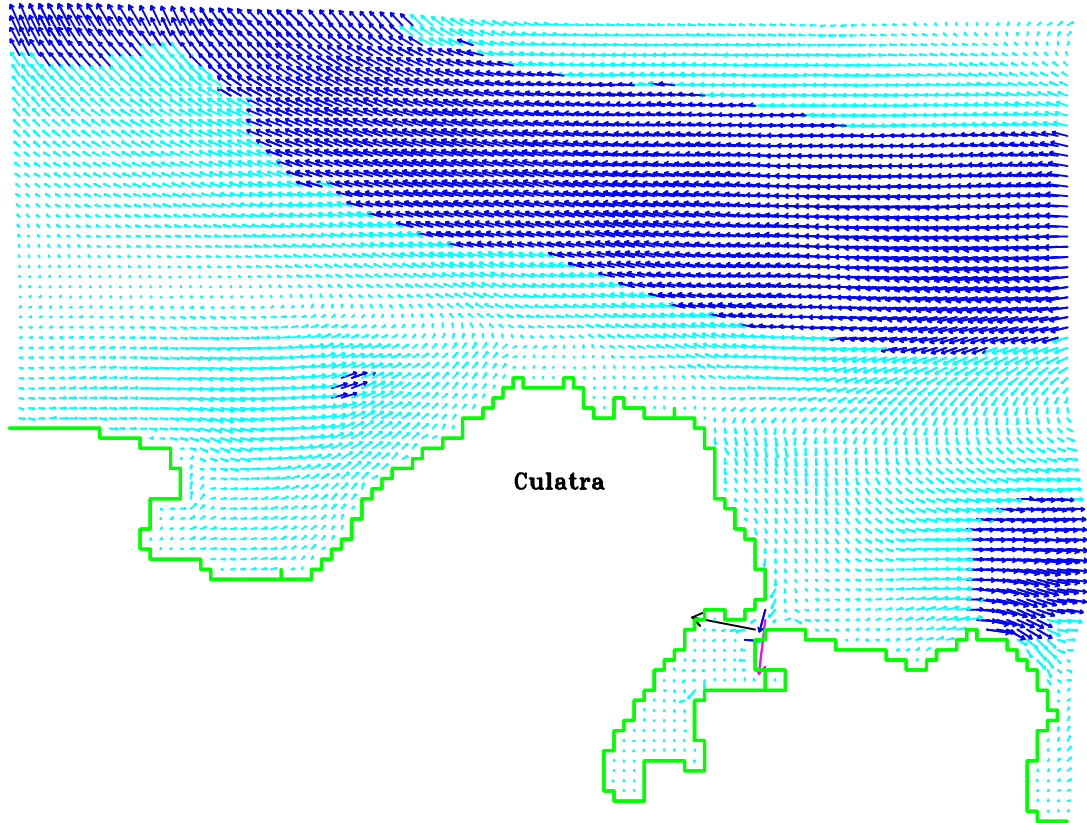
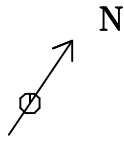
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Situacao de Referencia

Mare Media; Fase da Mare: PM-0.5h

Fig. - 23



Velocidades (m/s)

- [0.00,0.01[
- [0.01,0.02[
- [0.02,0.04[
- ≥ 0.04

0.05 m/s
→

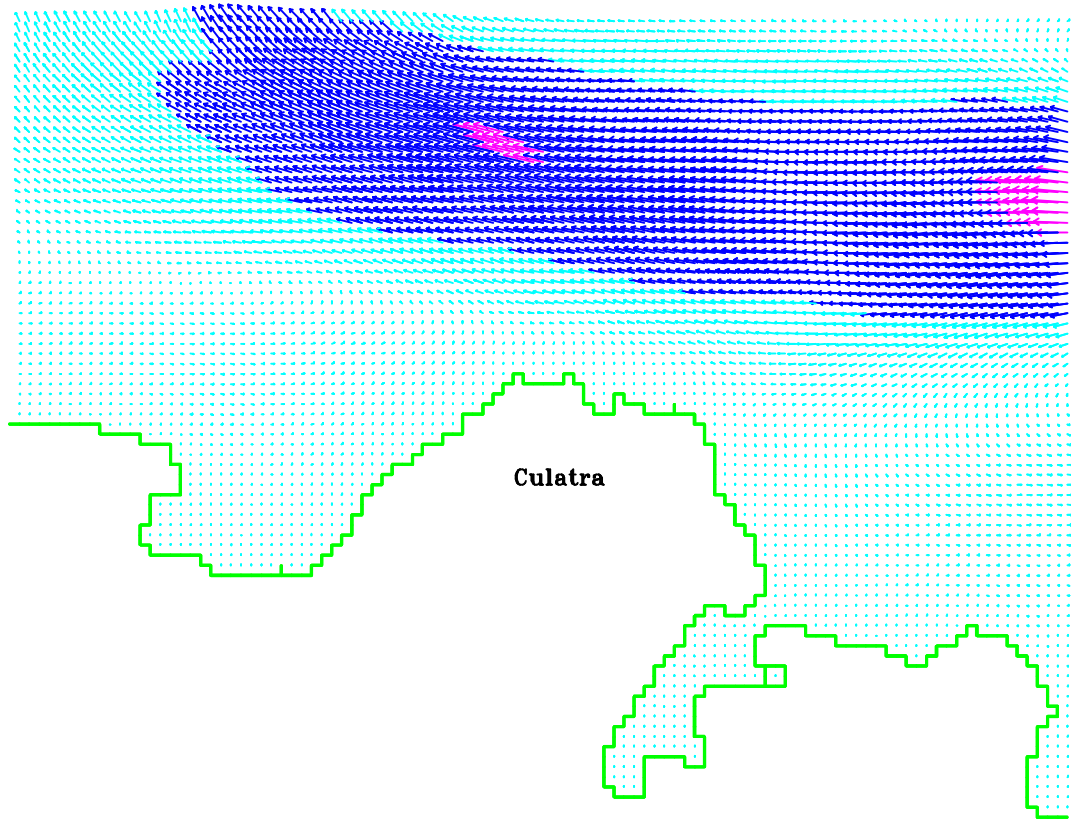
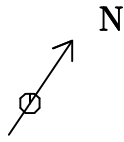
0. 400.m
—

Sub-Modelo Bidimensional da Culatra

Campo de Velocidades Residuais - Sit. Referencia

Intervalo de Filtragem: 35 horas

Fig. - 24



Transporte (m²/s)

- [0.00,0.05[
- [0.05,0.10[
- [0.10,0.25[
- >= 0.25

0.25 m²/s
→

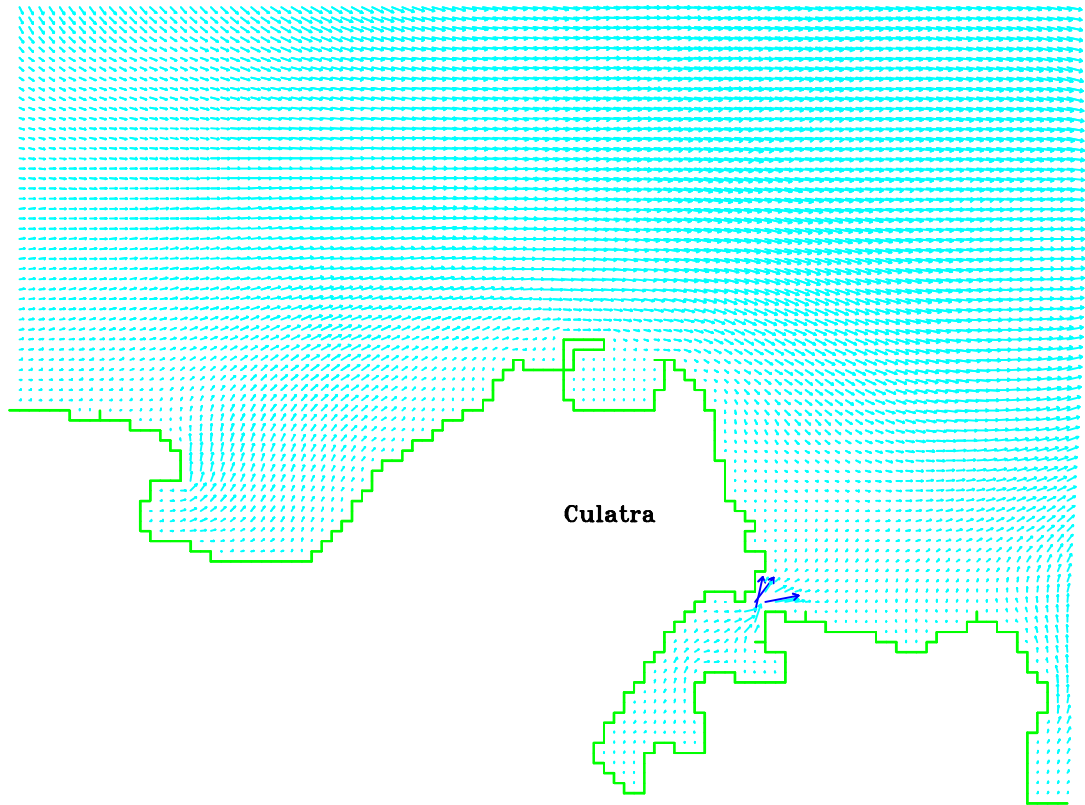
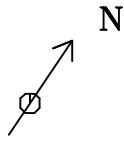
0. 400.m
—

Sub-Modelo Bidimensional da Culatra

Campo de Transportes Residuais - Sit. Referencia

Intervalo de Filtragem: 35 horas

Fig. - 25



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 38.00 Horas

0.25 m/s
→

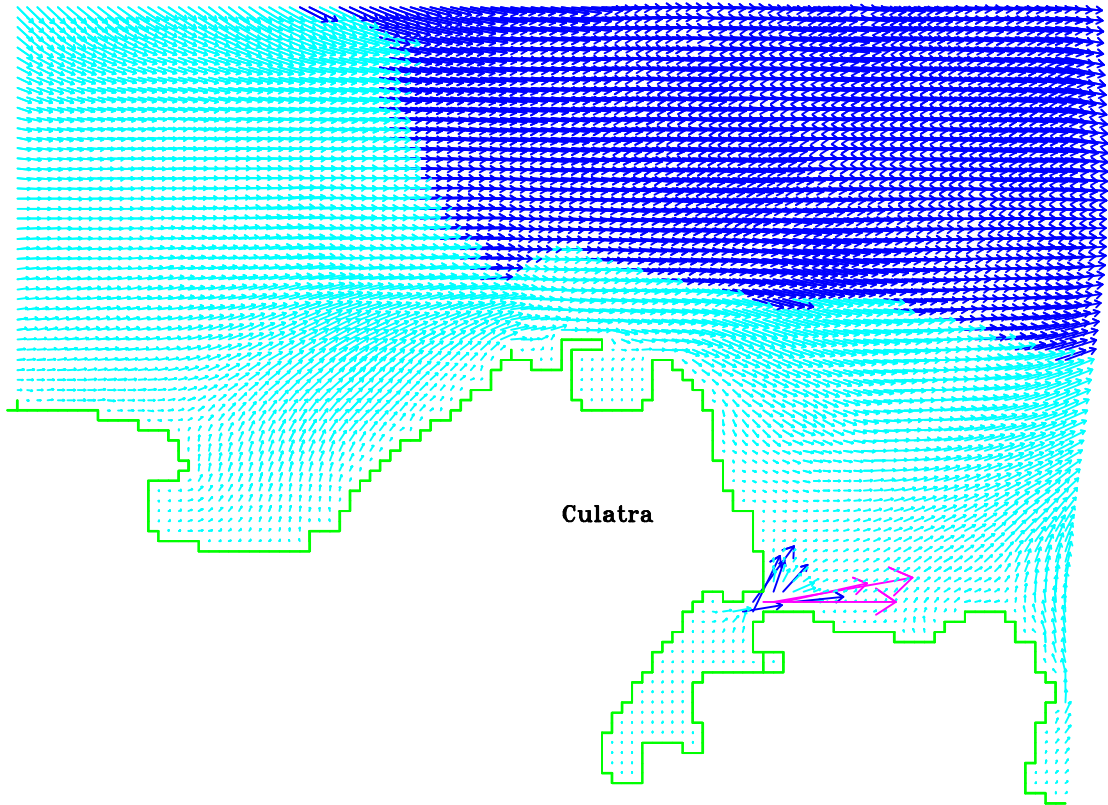
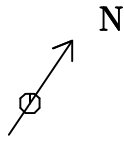
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM+0.5h

Fig. - 26



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 39.00 Horas

0.25 m/s
→

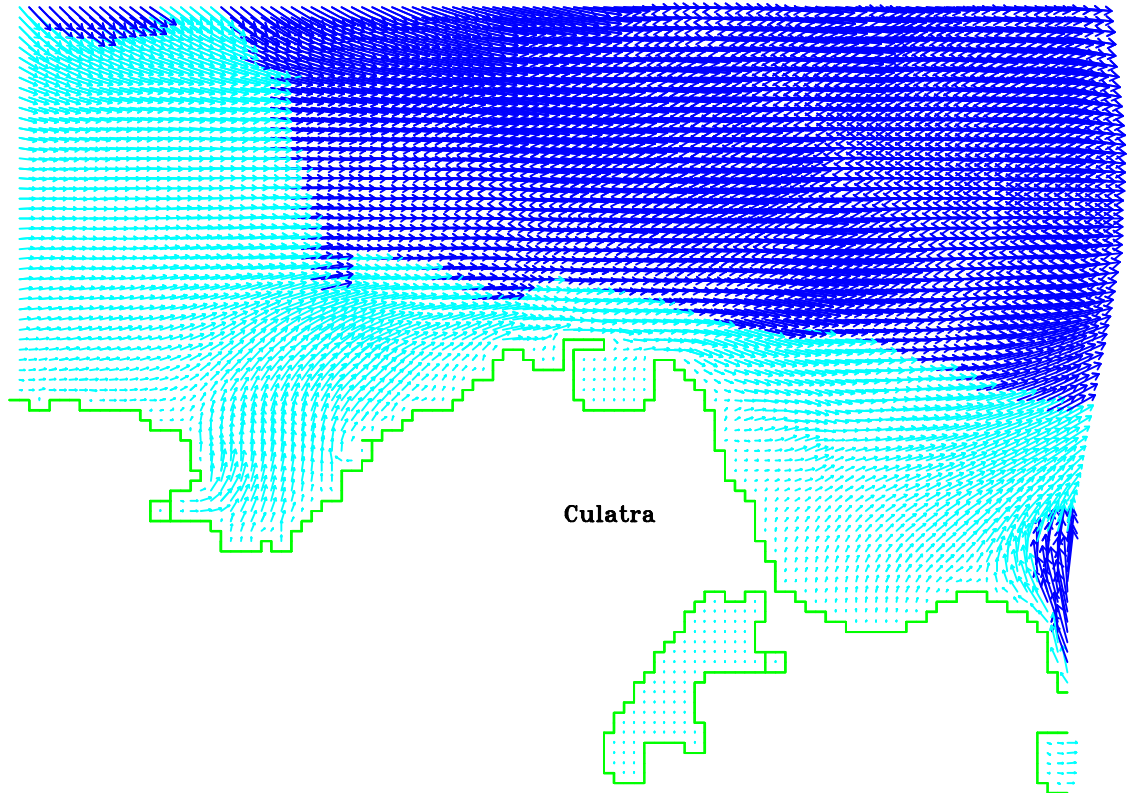
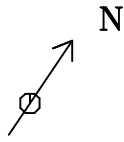
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM+1.5h

Fig. - 27



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 40.00 Horas

0.25 m/s
→

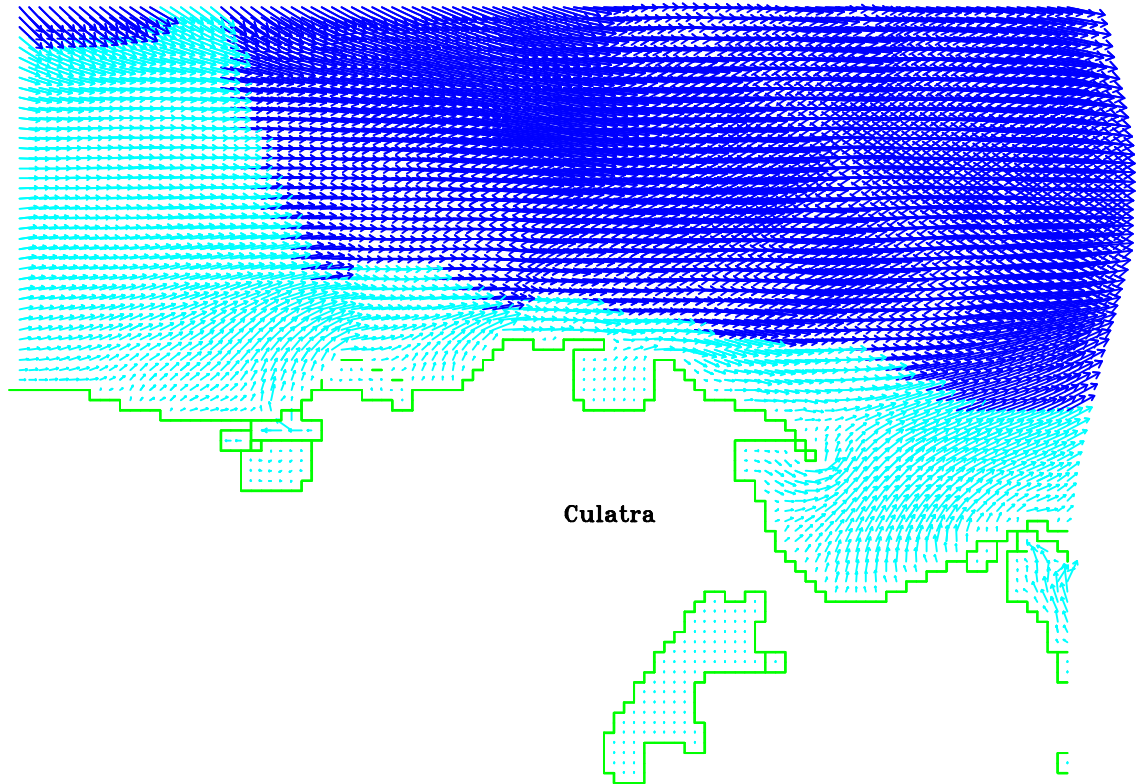
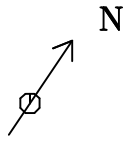
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM+2.5h

Fig. - 28



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 41.00 Horas

0.25 m/s
→

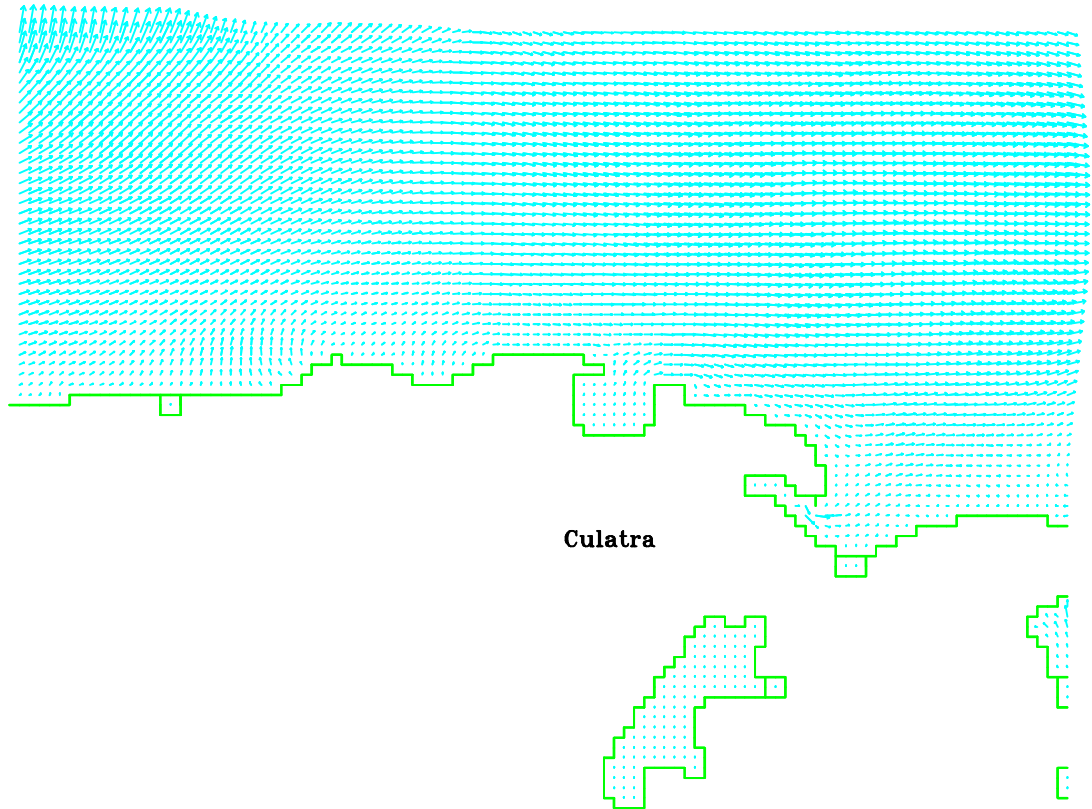
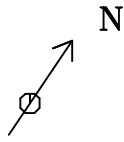
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM+3.5h

Fig. - 29



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 42.00 Horas

0.25 m/s
→

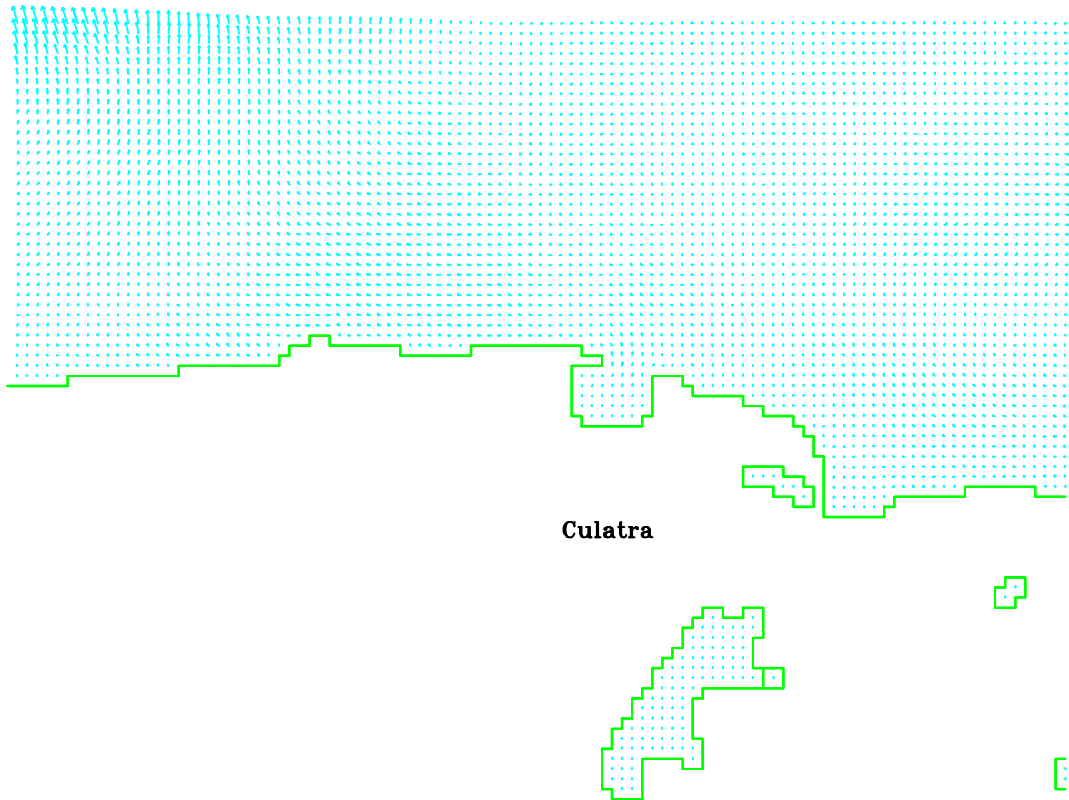
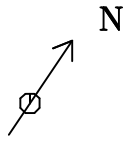
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: BM-1.0h

Fig. - 30



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 43.00 Horas

0.25 m/s
→

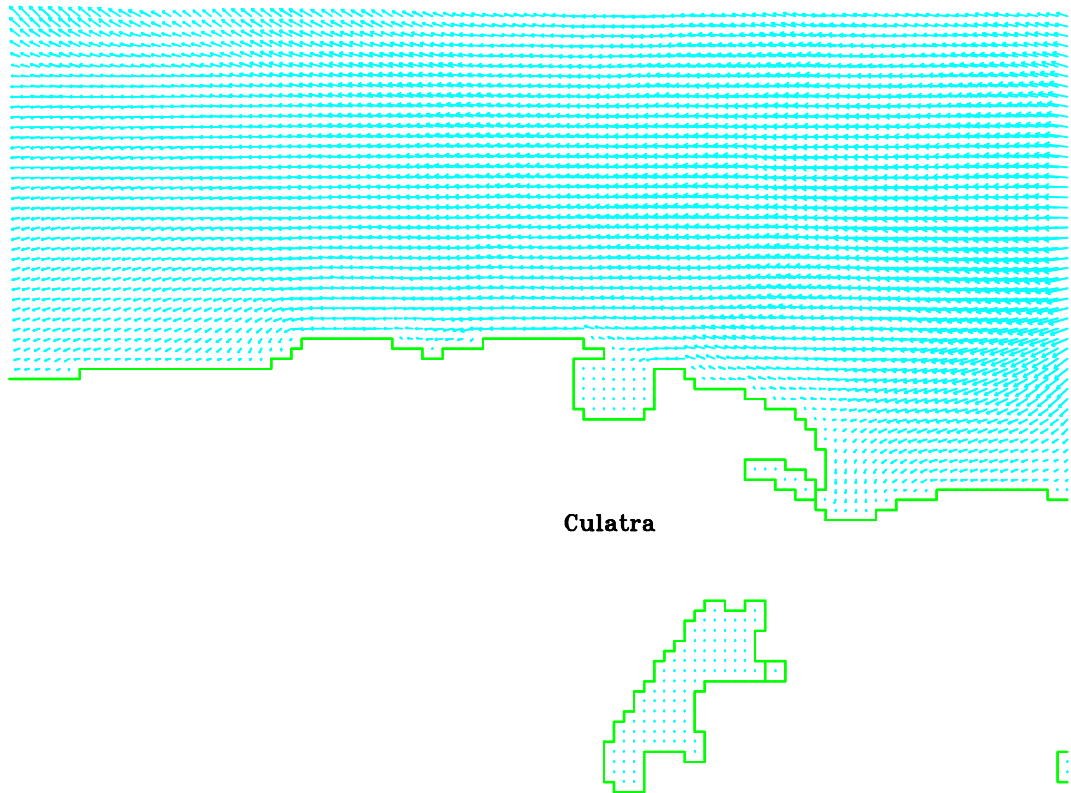
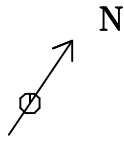
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: BM

Fig. - 31



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 44.00 Horas

0.25 m/s
→

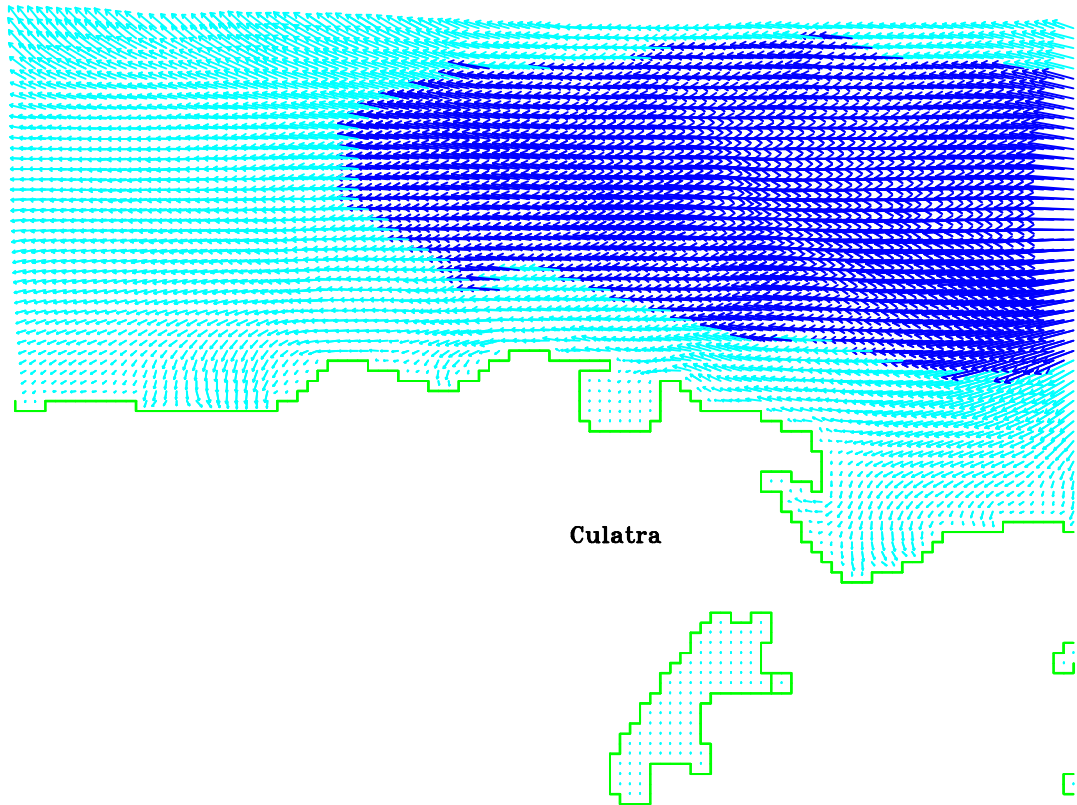
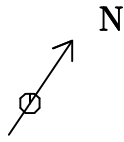
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: BM+1.0h

Fig. - 32



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 45.00 Horas

0.25 m/s
→

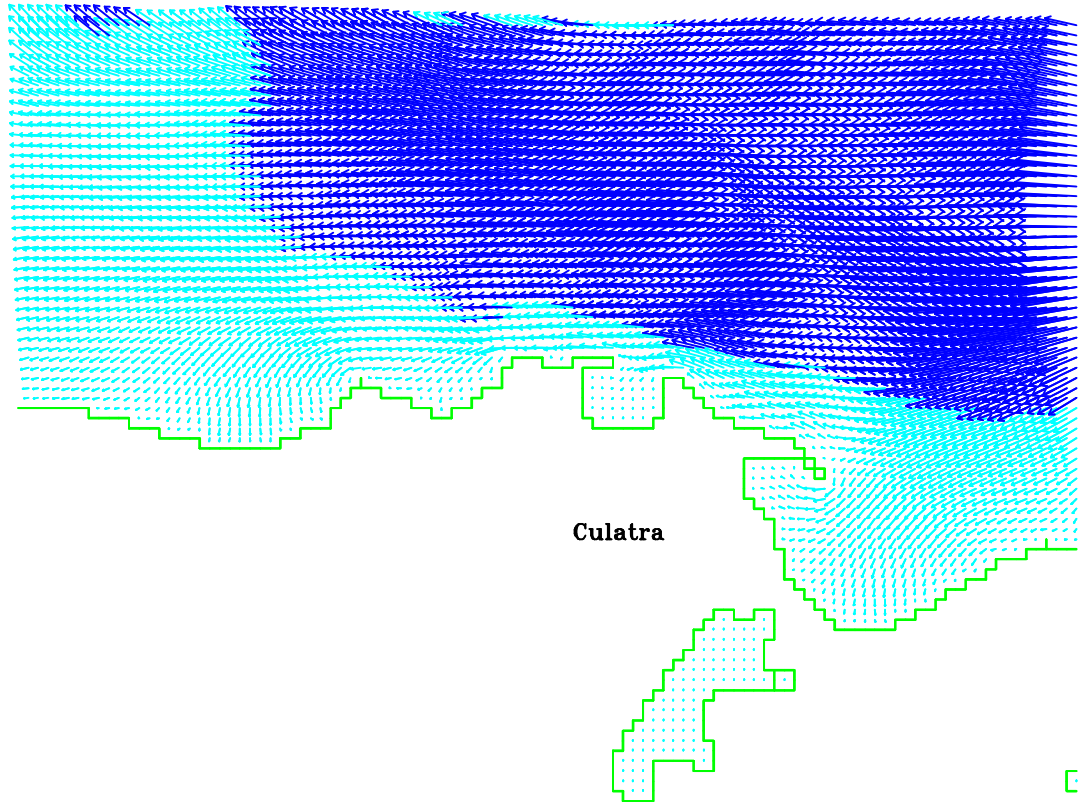
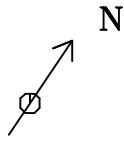
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: BM+2.0h

Fig. - 33



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 46.00 Horas

0.25 m/s
→

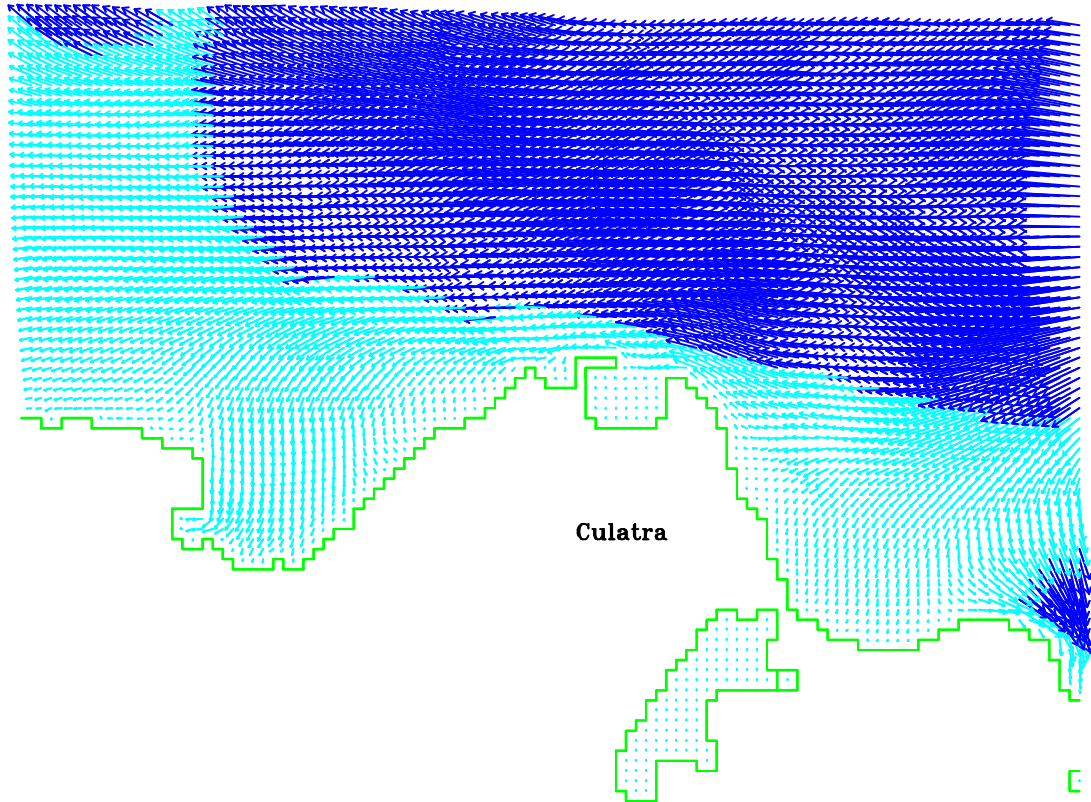
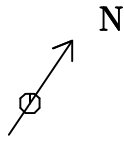
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: BM+3.0h

Fig. - 34



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 47.00 Horas

0.25 m/s
→

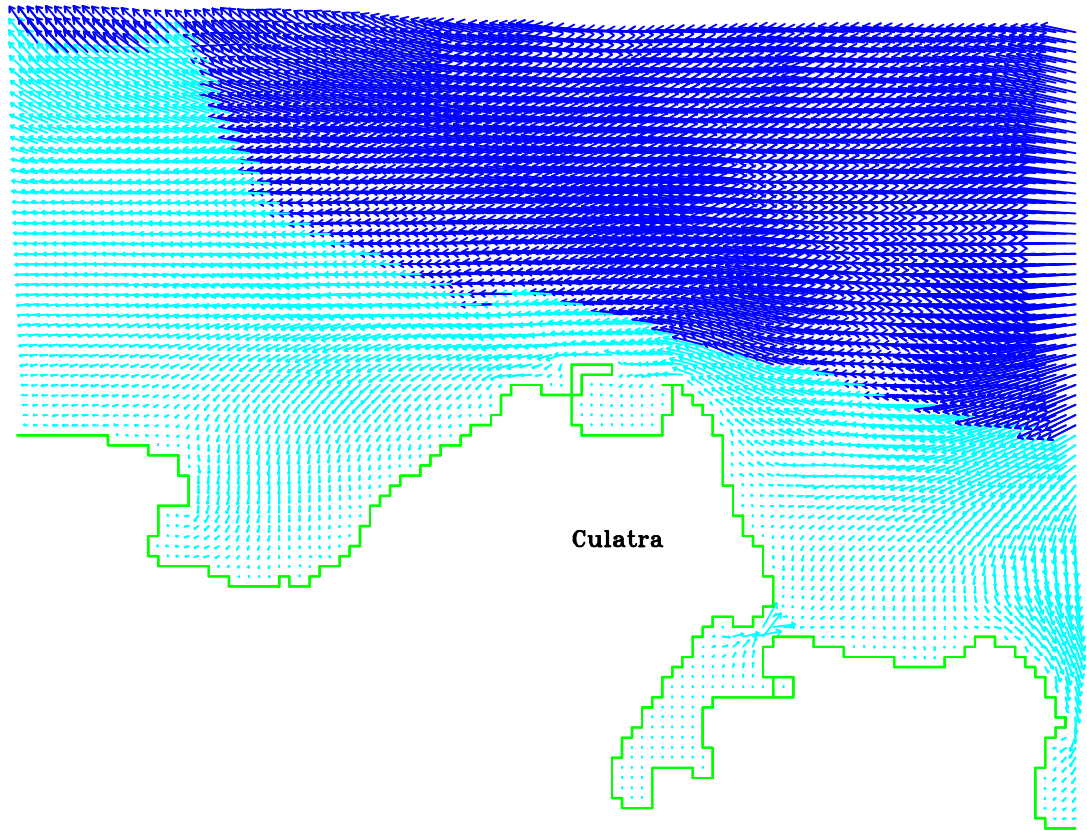
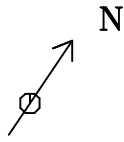
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM-2.5h

Fig. - 35



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 48.00 Horas

0.25 m/s
→

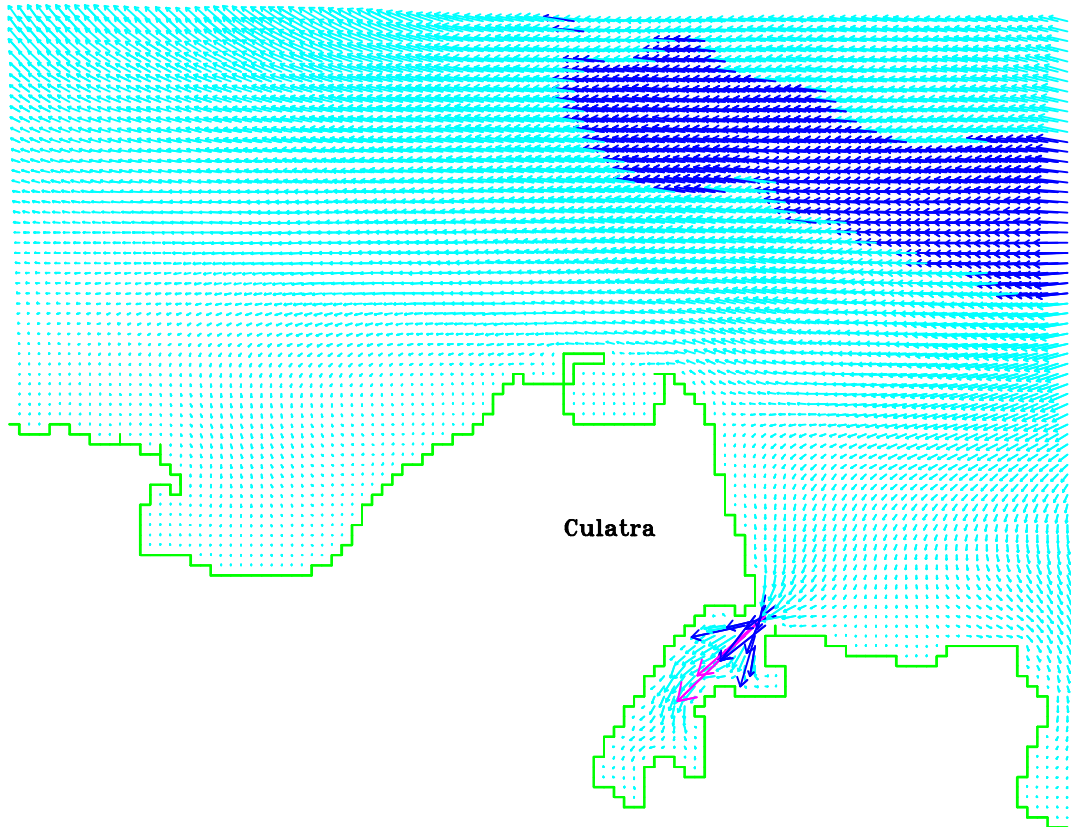
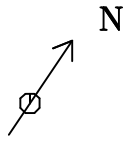
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM-1.5h

Fig. - 36



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 49.00 Horas

0.25 m/s
→

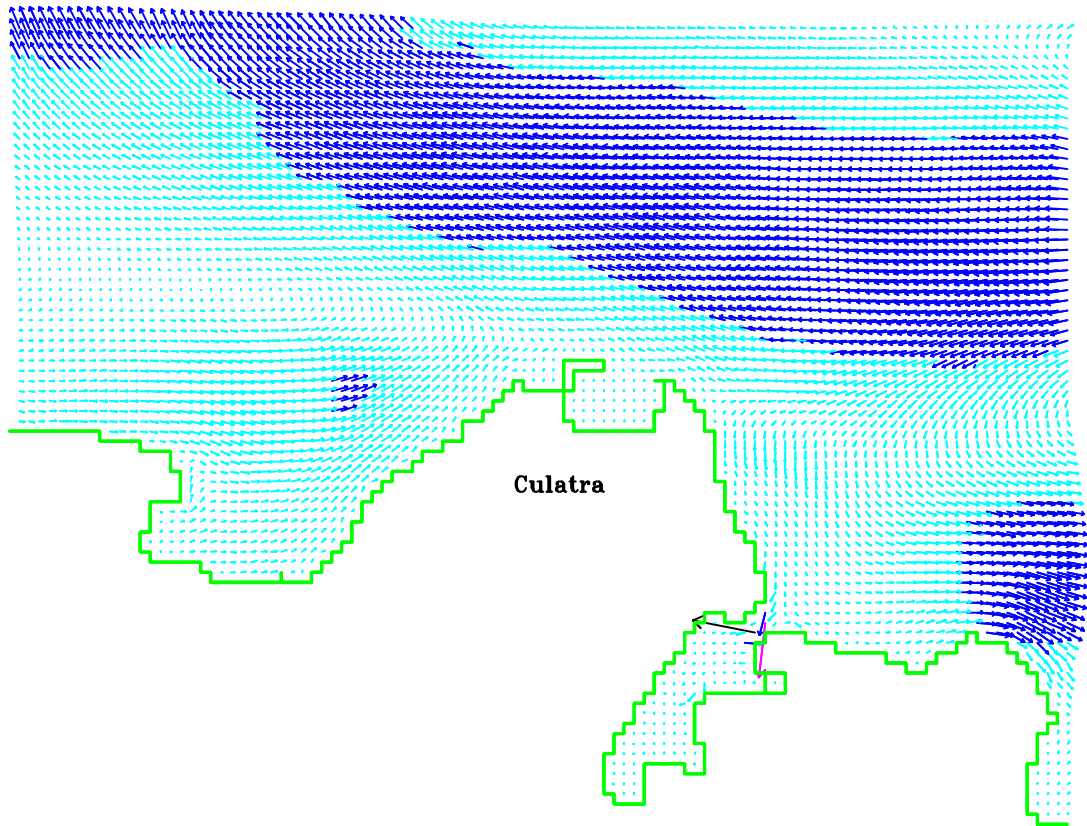
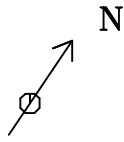
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao A

Mare Media; Fase da Mare: PM-0.5h

Fig. - 37



Velocidades (m/s)

- [0.00,0.01[
- [0.01,0.02[
- [0.02,0.04[
- ≥ 0.04

0.05 m/s
→

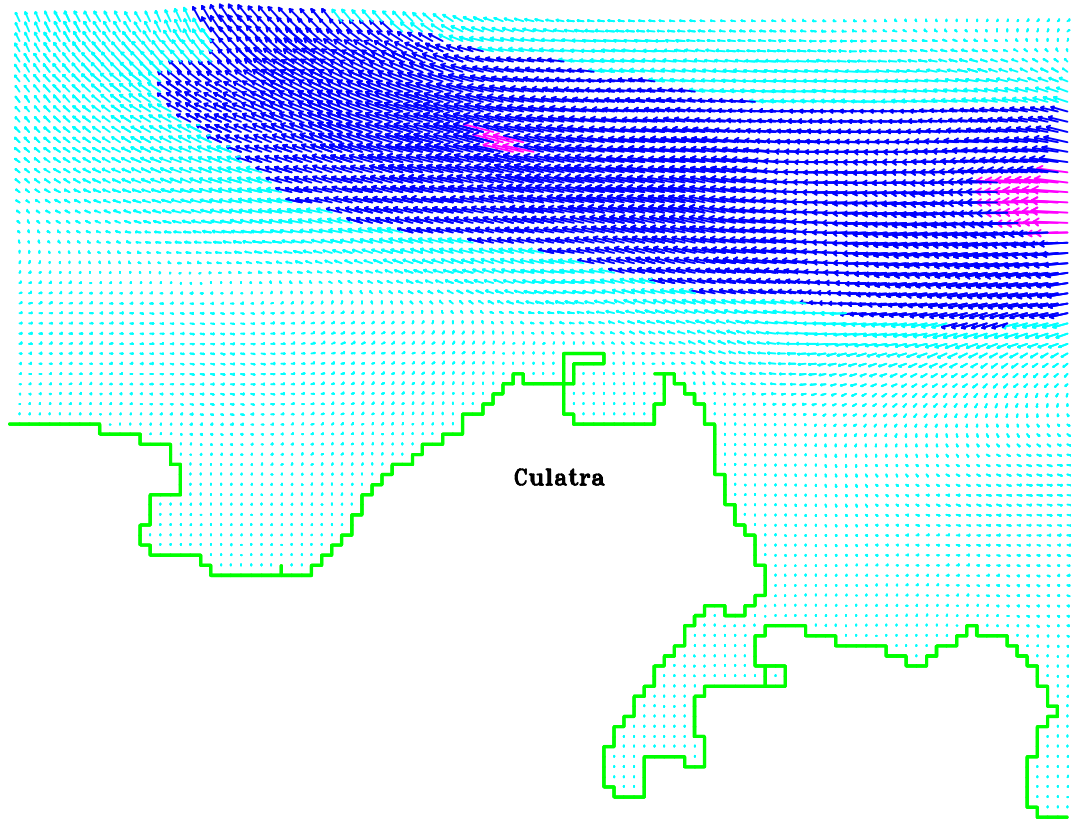
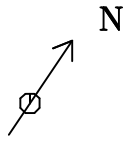
0. 400.m
—

Sub-Modelo Bidimensional da Culatra

Campo de Velocidades Residuais - Solucao A

Intervalo de Filtragem: 35 horas

Fig. - 38



Transporte (m²/s)

- [0.00,0.05[
- [0.05,0.10[
- [0.10,0.25[
- >= 0.25

0.25 m²/s



0. 400.m

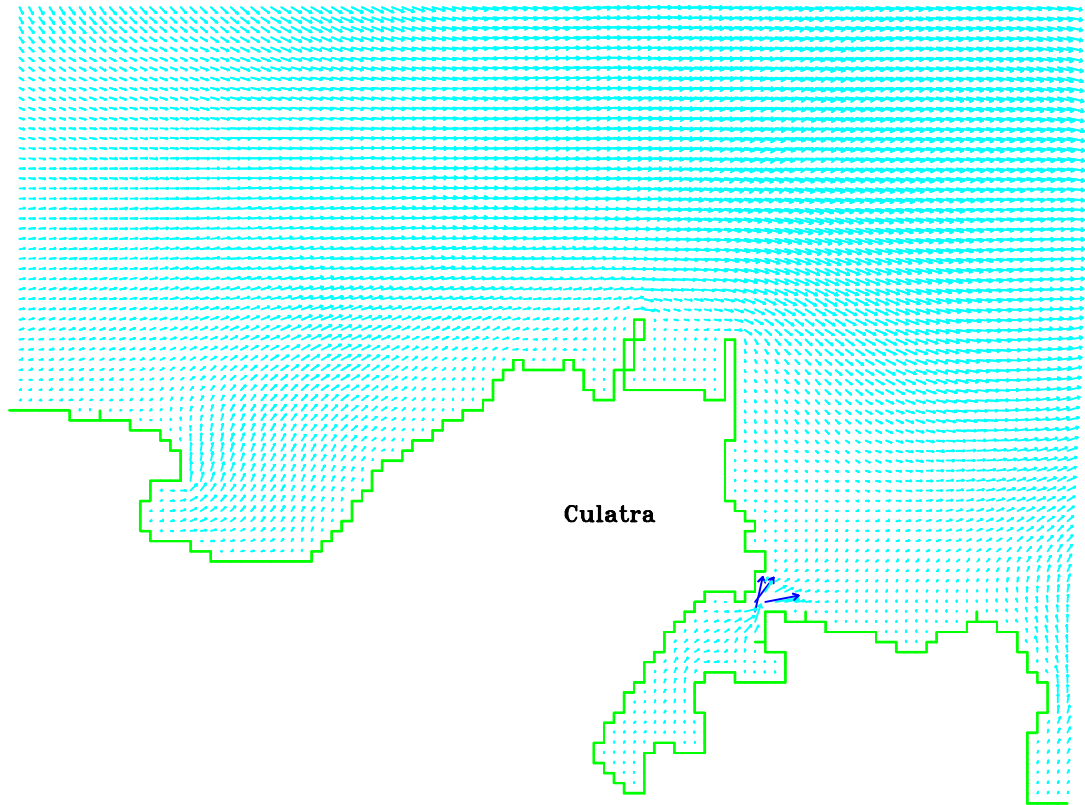
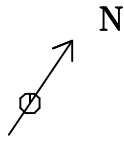


Sub-Modelo Bidimensional da Culatra

Campo de Transportes Residuais - Solucao A

Intervalo de Filtragem: 35 horas

Fig. - 39



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 38.00 Horas

0.25 m/s
→

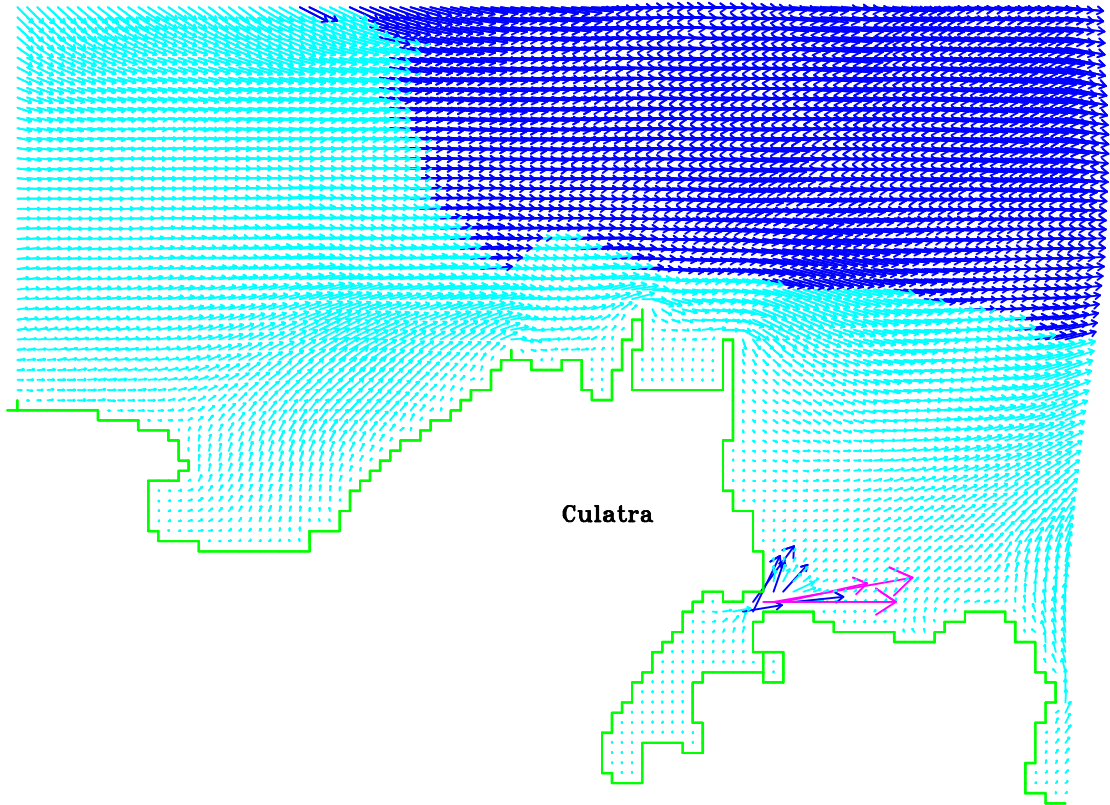
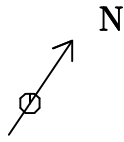
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM+0.5h

Fig. - 40



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 39.00 Horas

0.25 m/s
→

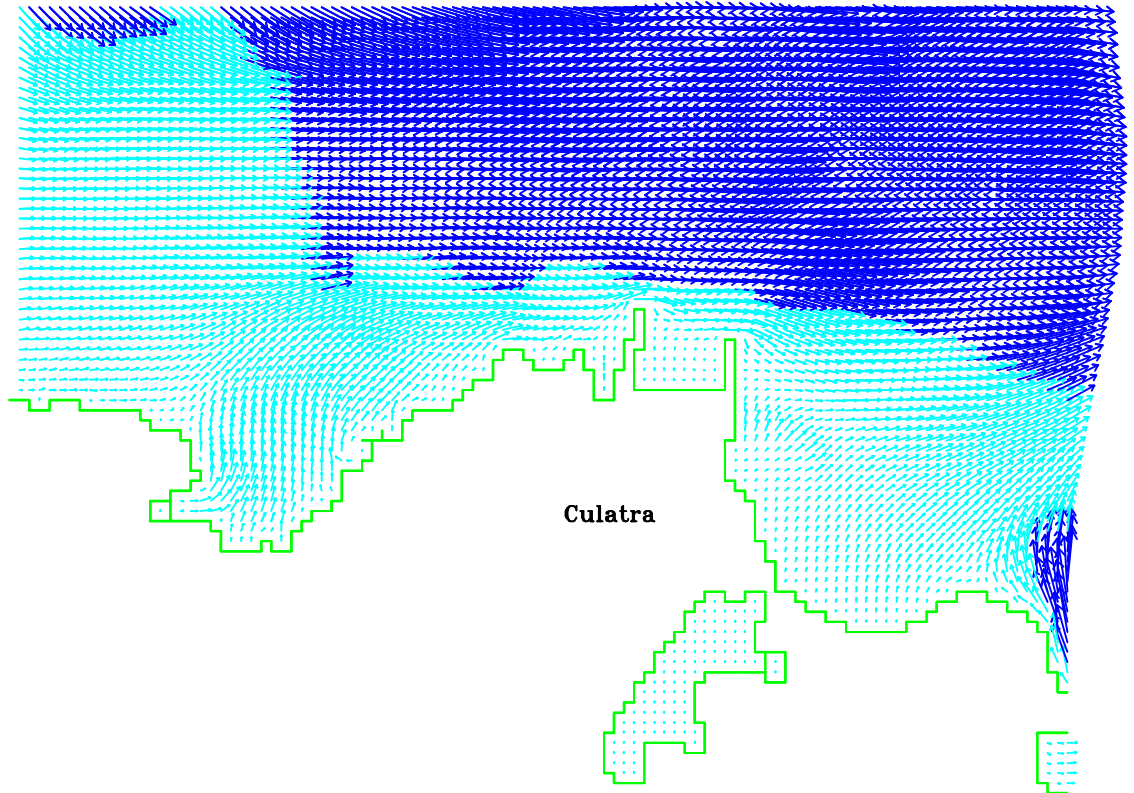
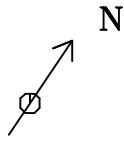
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM+1.5h

Fig. - 41



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 40.00 Horas

0.25 m/s
→

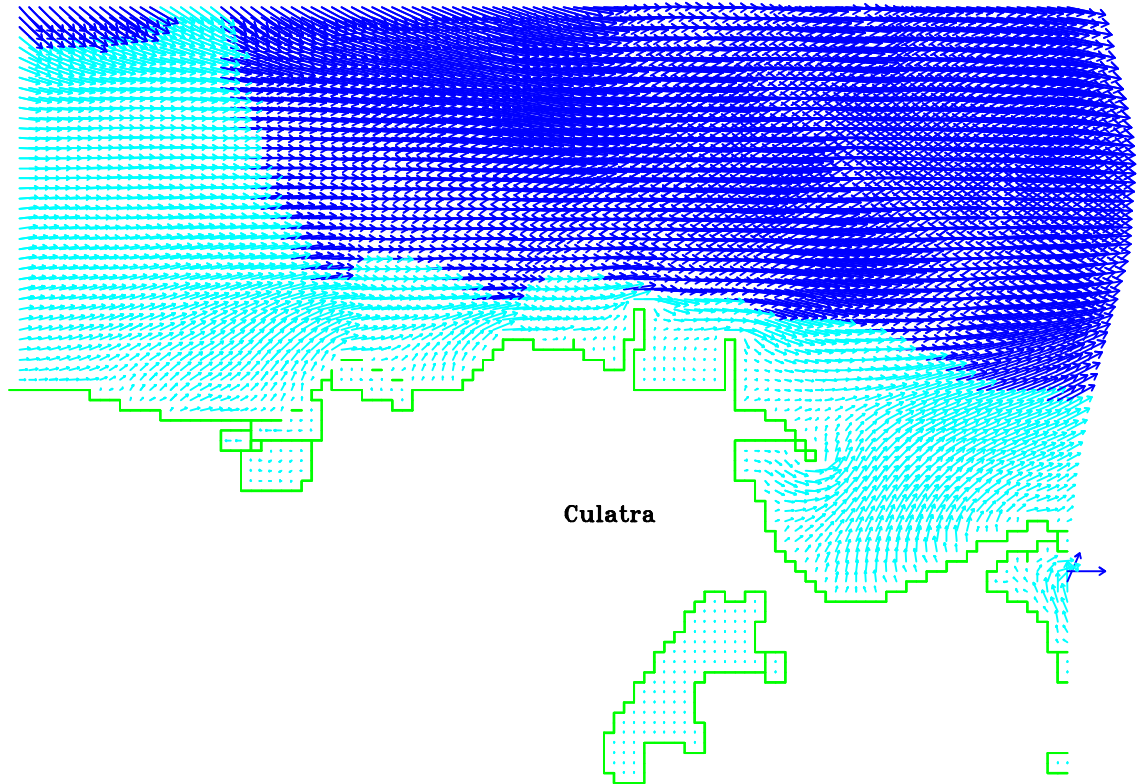
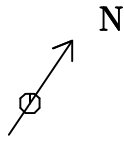
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM+2.5h

Fig. - 42



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 41.00 Horas

0.25 m/s
→

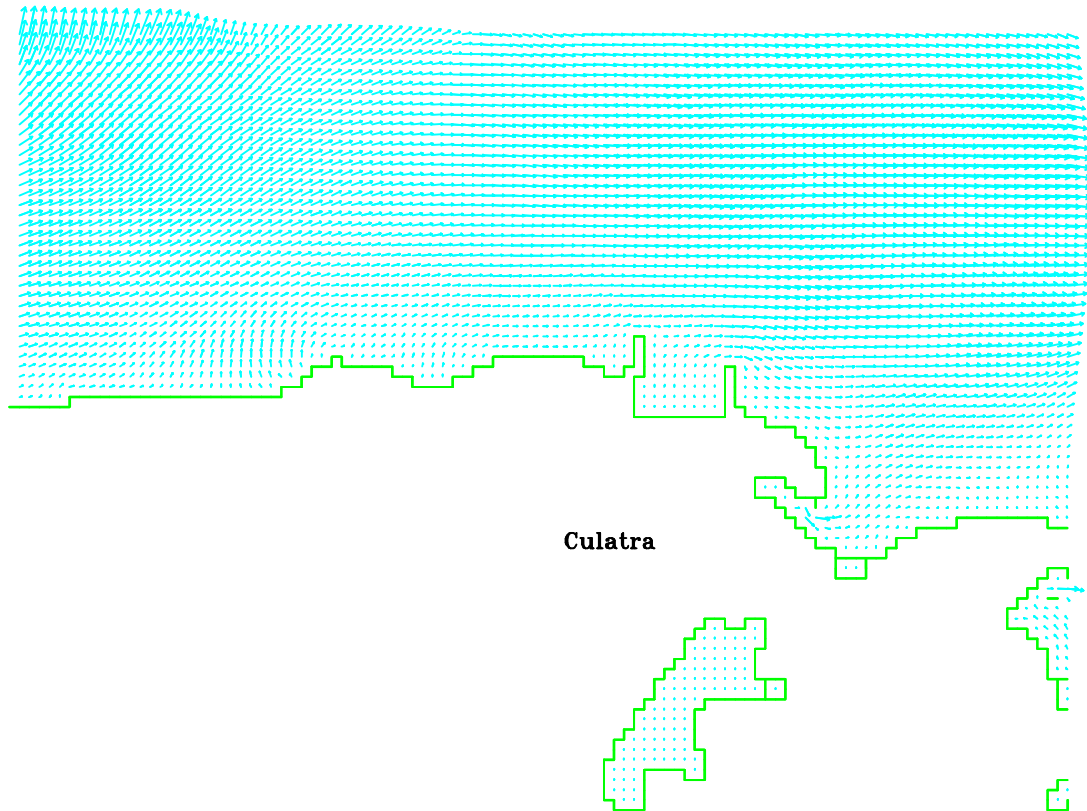
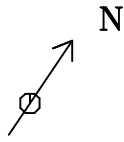
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM+3.5h

Fig. - 43



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 42.00 Horas

0.25 m/s
→

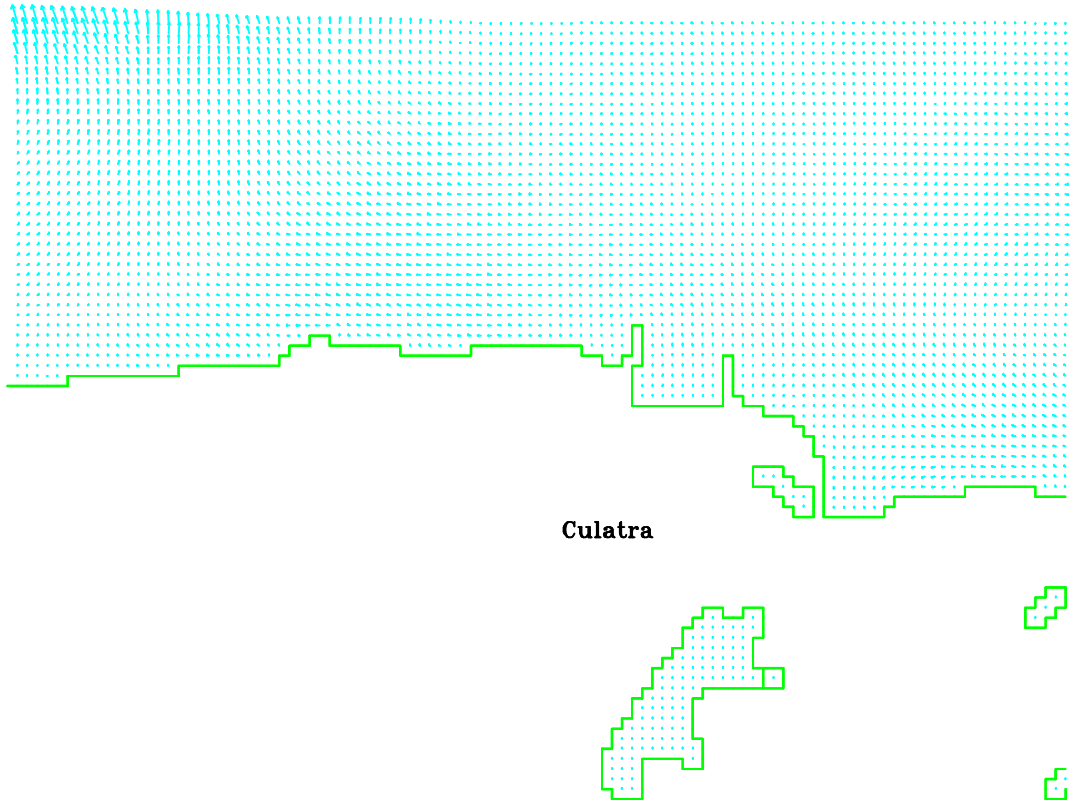
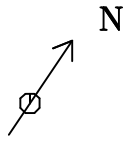
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: BM-1.0h

Fig. - 44



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 43.00 Horas

0.25 m/s
→

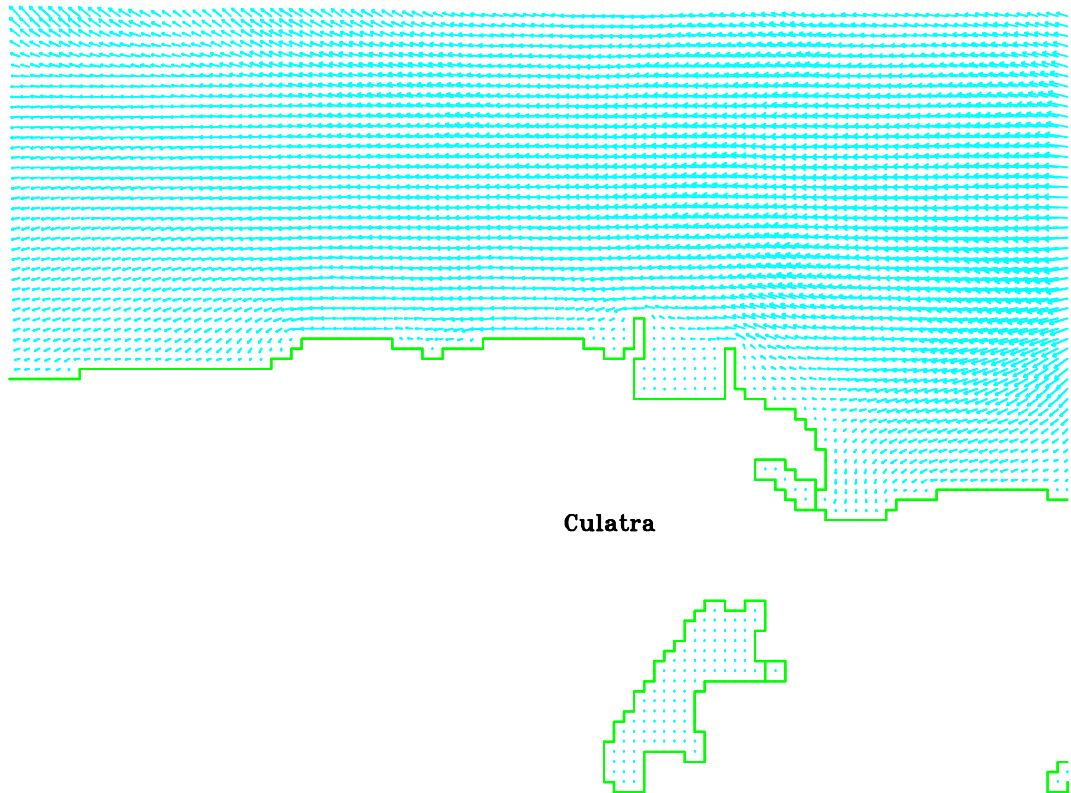
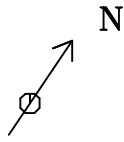
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: BM

Fig. - 45



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 44.00 Horas

0.25 m/s
→

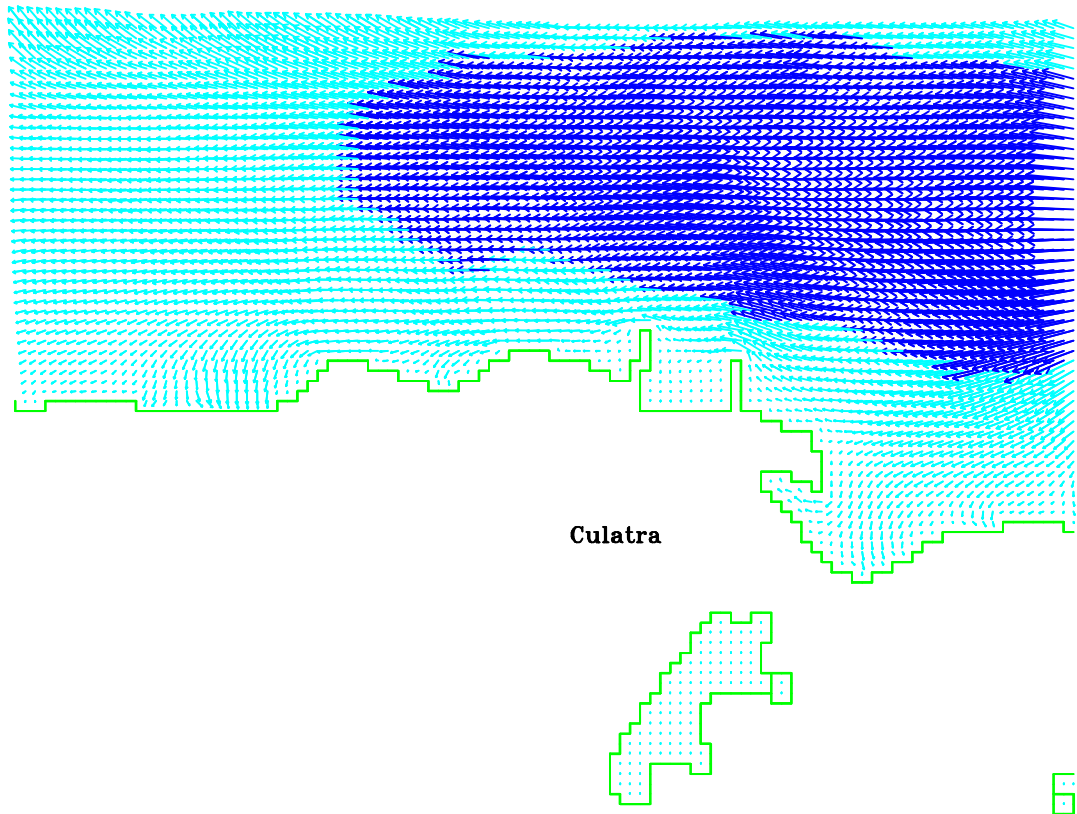
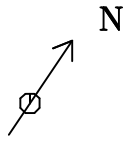
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: BM+1.0h

Fig. - 46



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 45.00 Horas

0.25 m/s
→

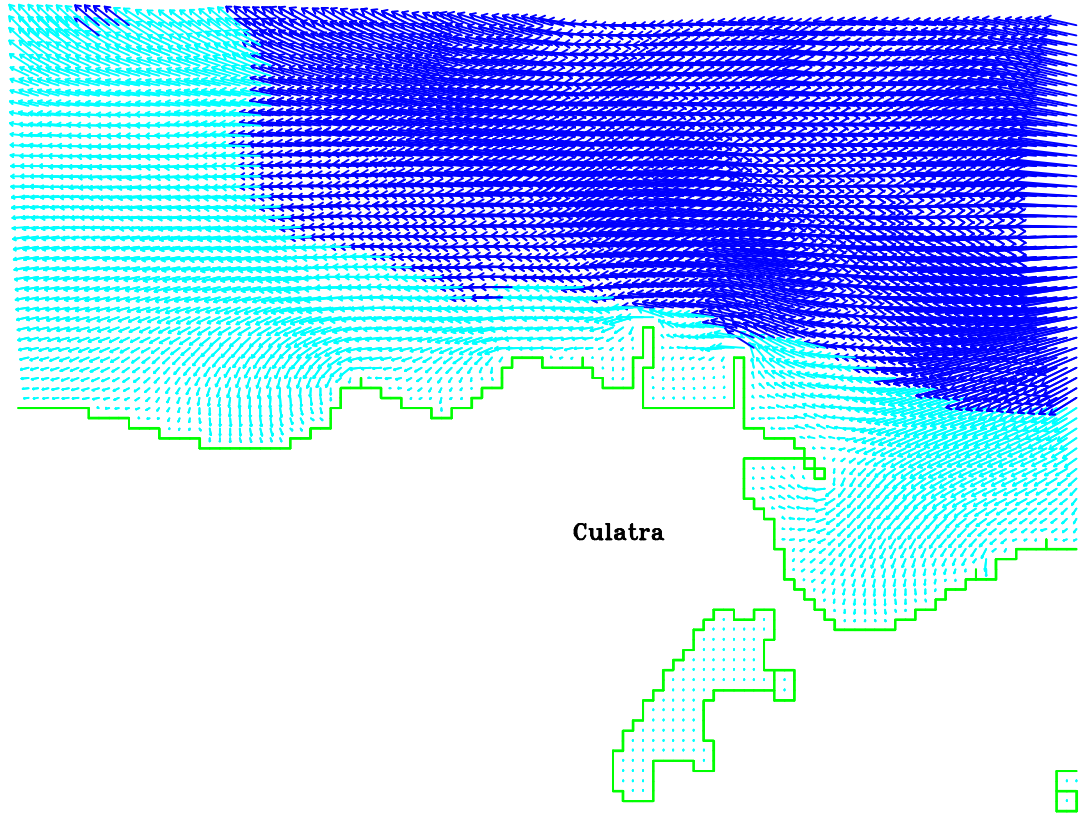
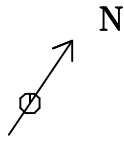
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: BM+2.0h

Fig. - 47



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 46.00 Horas

0.25 m/s
→

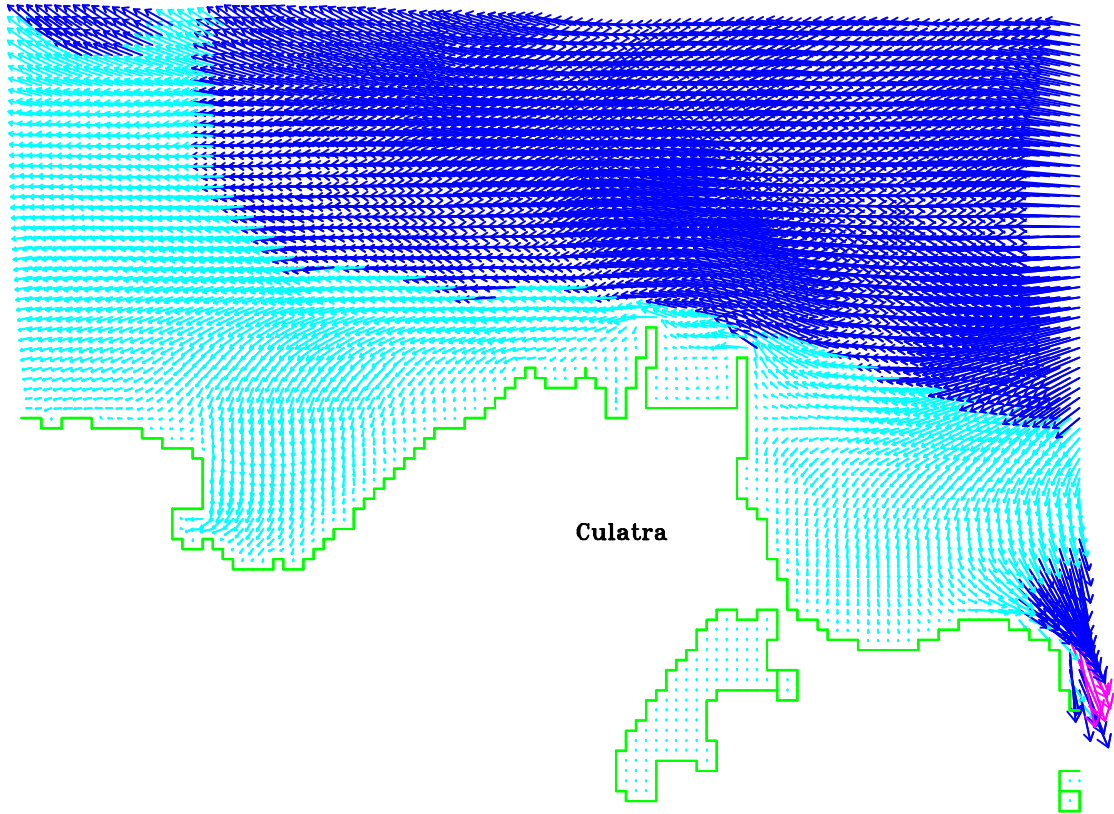
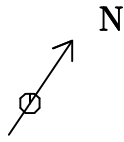
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: BM+3.0h

Fig. - 48



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 47.00 Horas

0.25 m/s
→

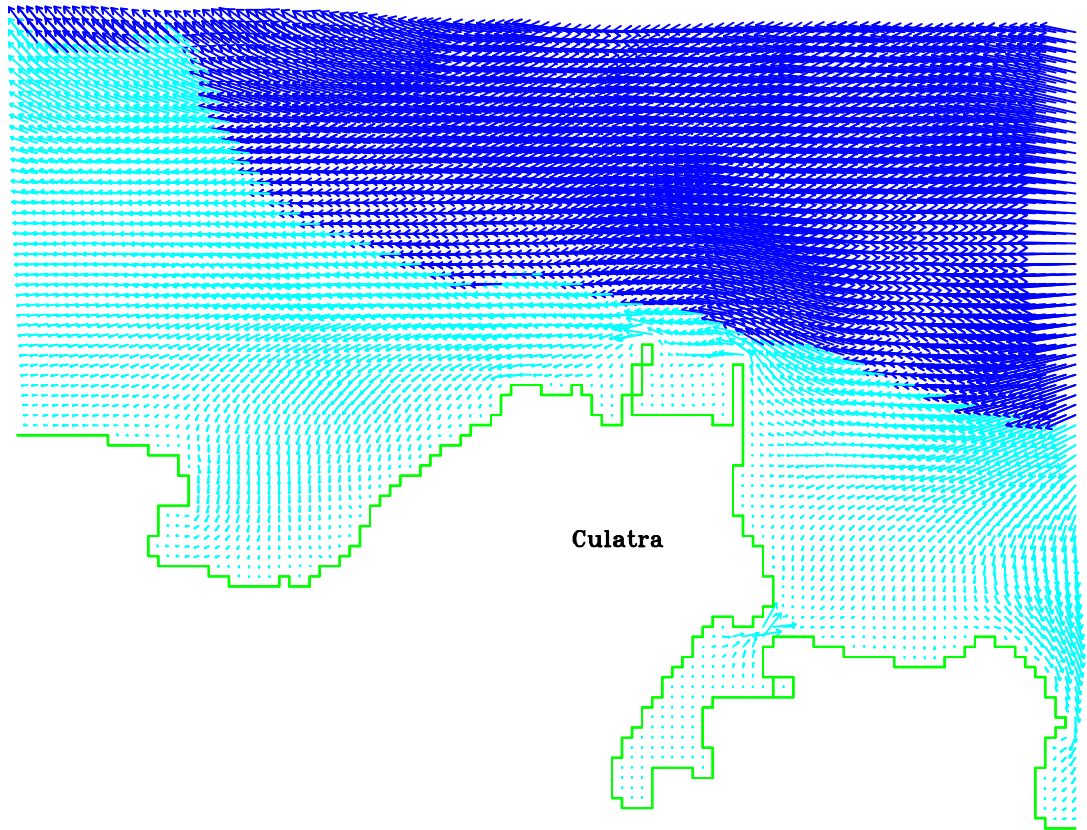
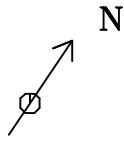
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM-2.5h

Fig. - 49



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- >= 0.50

Tempo de Simulacao: 48.00 Horas

0.25 m/s
→

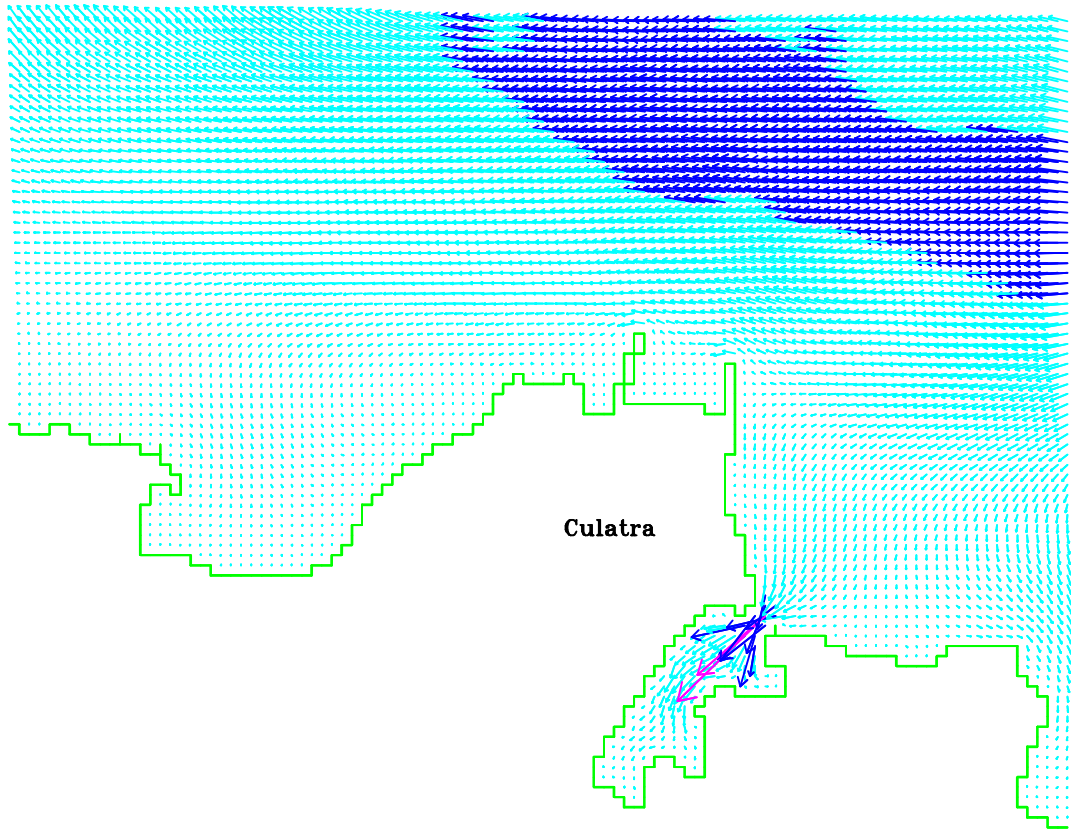
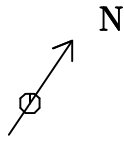
0. 200.m
▬

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM-1.5h

Fig. - 50



Velocidades (m/s)

- [0.00,0.10[
- [0.10,0.25[
- [0.25,0.50[
- ≥ 0.50

Tempo de Simulacao: 49.00 Horas

0.25 m/s
→

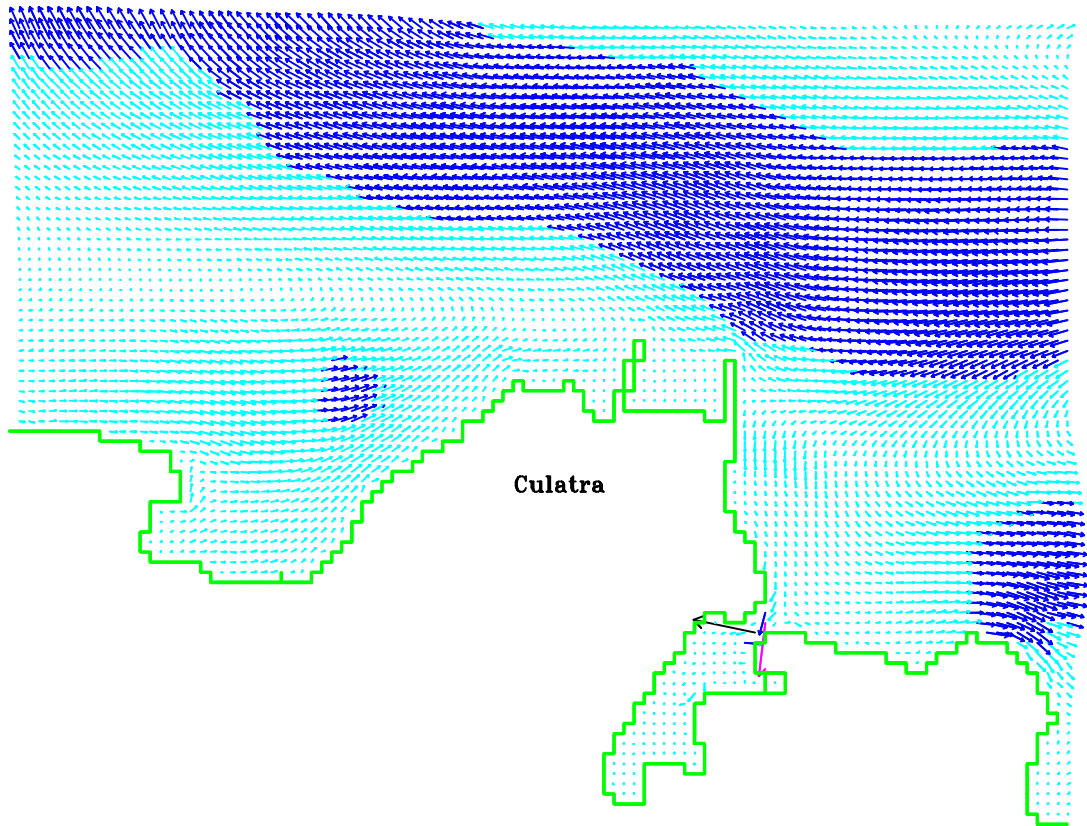
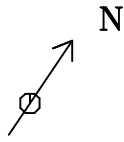
0. 200.m
—

Sub-Modelo Bidimensional da Culatra

Campo da Velocidade - Solucao B

Mare Media; Fase da Mare: PM-0.5h

Fig. - 51



Velocidades (m/s)

- [0.00,0.01[
- [0.01,0.02[
- [0.02,0.04[
- ≥ 0.04

0.05 m/s



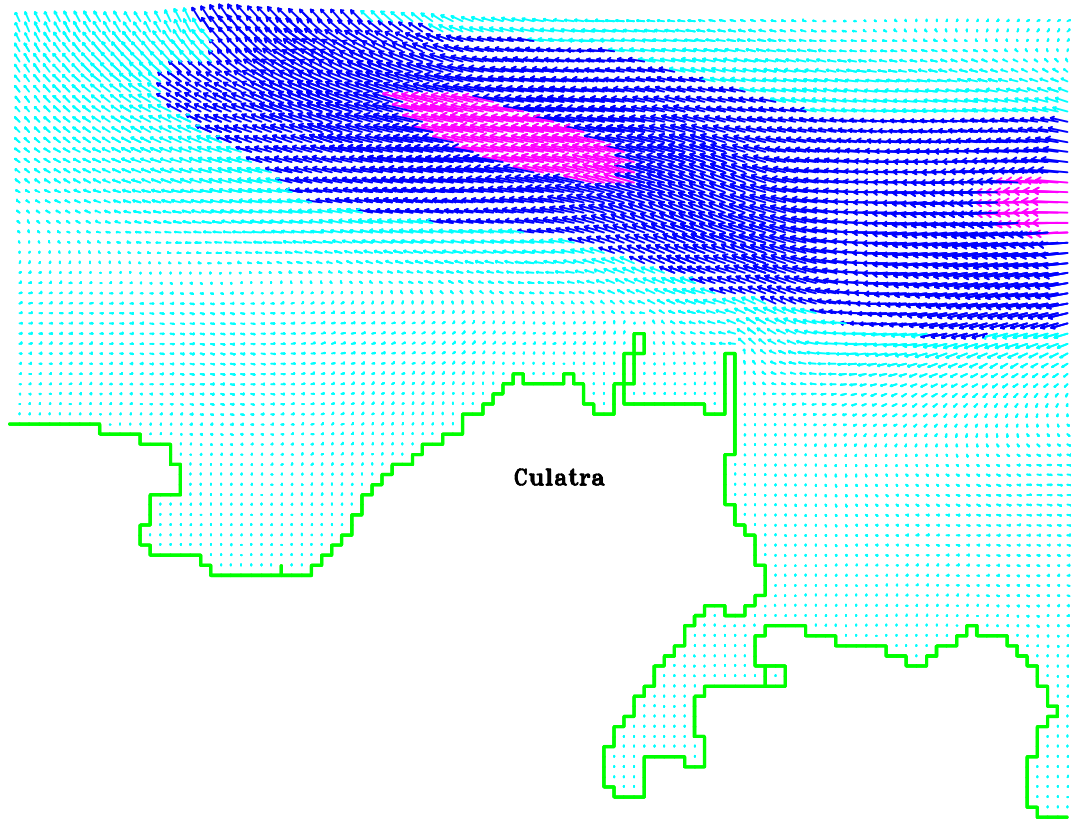
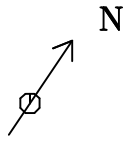
0. 400.m

Sub-Modelo Bidimensional da Culatra

Campo de Velocidades Residuais - Solucao B

Intervalo de Filtragem: 35 horas

Fig. - 52



Transporte (m²/s)

- [0.00,0.05[
- [0.05,0.10[
- [0.10,0.25[
- >= 0.25

0.25 m²/s



0. 400.m

Sub-Modelo Bidimensional da Culatra

Campo de Transportes Residuais - Solucao B

Intervalo de Filtragem: 35 horas

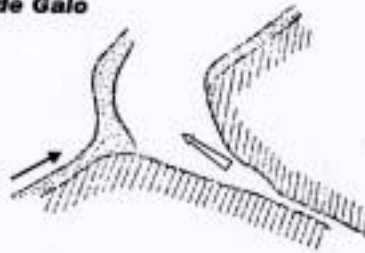
Fig. - 53

Transporte Litoral

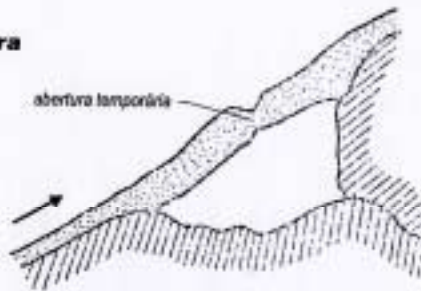
① **Flecha**



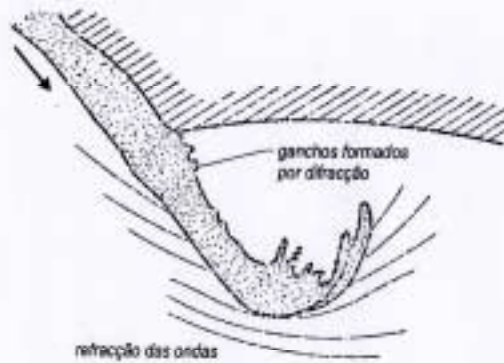
② **Pé de Galo**



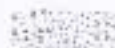
③ **Barra**




④ **Terminações em báculo**



 **Costa**

 **Acumulação sedimentar**

 **Deriva litoral**

 **Corrente fluvial**

 **Linha de crista das ondas**

(Extraído de: C. Dubouloz-razavet / J.P. Barusseau: Facteurs dynamiques de la sédimentation marine. ENSTA-PARIS)

Figura 54 (Rev00) - TIPOS DE ACUMULAÇÃO SEDIMENTAR NUMA COSTA ARENOSA.

1958



ALF
MEMBERS
DATE
NO. 100

ASTG 1370PMG USAF 7JUL 58. 57AM23 ROLL-75 00

535081 4874 8744

538081
6800



1991



1996

2001



Acumulação Sedimentar

Nº do Desenho	Título do Desenho	Data de Aprovação	Ficheiro
02.DE-S.001(00)	PLANTA DE LOCALIZAÇÃO	2005-12-30	265102S0010.DWG
02.DE-S.002(00)	LEVANTAMENTO HIDROGRÁFICO E COMPLETAGEM TOPOGRÁFICA	2005-12-30	265102S0020.DWG
02.DE-S.003(00)	IMPLANTAÇÃO GERAL	2005-12-30	265102S0030.DWG
02.DE-S.004(00)	CORTINA DE RETENÇÃO PLANTA E PORMENORES	2005-12-30	265102S0040.DWG
02.DE-S.005(00)	PLANO DE DRAGAGEM PLANTA E PERFIS	2005-12-30	265102S0050.DWG

Cliente:



CÂMARA MUNICIPAL DE FARO

Contrato:

CONCEPÇÃO E PROJECTO DE EXECUÇÃO DE UM PORTO DE ABRIGO
PARA A PEQUENA PESCA, NA ILHA DA CULATRA

Etapa do contrato:

PROJECTO DE EXECUÇÃO

LISTA DE DESENHOS

	Elaborou	BRM		Nº da Lista: 02.LD-001(00)
	Verificou	MST		
	Aprovou	TLS	Nº do Contrato: TLS2651	
	Data	2005-12-30	Fichº: 265102LD010.DWG	Folha:

I - Cálculo do Transporte Litoral - Método de Van Rijn

PMAV			Transporte litoral phi=0°		Transporte litoral phi=180°		Resultante anual
			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	3,34	Ssnum	2,58E-06	4,07E+01	2,19E-06	3,45E+01	6,23E+00
depth (m)	0	Ssform	2,57E-05	4,05E+02	2,54E-05	4,01E+02	4,04E+00
Hd (m)	3,34	Sbedl	1,89E-07	2,97E+00	3,93E-08	6,19E-01	2,35E+00
Hs (m)	1	Stotnum	2,77E-06	4,37E+01	2,22E-06	3,51E+01	8,58E+00
Tp (s)	3	Stotform	2,59E-05	4,08E+02	2,55E-05	4,02E+02	6,39E+00
Ug (m/s)	0,1	Média	1,43E-05	2,26E+02	1,38E-05	2,18E+02	7,49E+00

BMAV			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	0,61	Ssnum	8,36E-04	1,32E+04	8,46E-04	1,33E+04	-1,61E+02
depth (m)	0	Ssform	5,57E-04	8,78E+03	5,56E-04	8,76E+03	2,21E+01
Hd (m)	3,34	Sbedl	1,24E-05	1,96E+02	1,02E-05	1,61E+02	3,53E+01
Hs (m)	1	Stotnum	8,48E-04	1,34E+04	8,56E-04	1,35E+04	-1,26E+02
Tp (s)	3	Stotform	5,69E-04	8,98E+03	5,66E-04	8,92E+03	5,74E+01
Ug (m/s)	0,1	Média	7,09E-04	1,12E+04	7,11E-04	1,12E+04	-3,41E+01

NM			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	2	Ssnum	2,73E-05	4,30E+02	2,47E-05	3,89E+02	4,15E+01
depth (m)	0	Ssform	1,20E-04	1,90E+03	1,19E-04	1,88E+03	1,73E+01
Hd (m)	3,34	Sbedl	1,14E-06	1,79E+01	5,86E-07	9,24E+00	8,69E+00
Hs (m)	1	Stotnum	2,84E-05	4,48E+02	2,52E-05	3,98E+02	5,02E+01
Tp (s)	3	Stotform	1,22E-04	1,92E+03	1,20E-04	1,89E+03	2,60E+01
Ug (m/s)	0,1	Média	7,50E-05	1,18E+03	7,26E-05	1,14E+03	3,81E+01

NM			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	2	Ssnum	5,97E-06	9,41E+01	5,33E-06	8,40E+01	1,01E+01
depth (m)	0	Ssform	6,72E-05	1,06E+03	6,66E-05	1,05E+03	8,20E+00
Hd (m)	3,34	Sbedl	2,50E-07	3,94E+00	8,12E-08	1,28E+00	2,66E+00
Hs (m)	1	Stotnum	6,22E-06	9,80E+01	5,41E-06	8,53E+01	1,27E+01
Tp (s)	2	Stotform	6,74E-05	1,06E+03	6,67E-05	1,05E+03	1,09E+01
Ug (m/s)	0,1	Média	3,68E-05	5,80E+02	3,61E-05	5,69E+02	1,18E+01

NM			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	2	Ssnum	6,09E-07	9,60E+00	3,79E-07	5,98E+00	3,63E+00
depth (m)	0	Ssform	5,32E-06	8,39E+01	5,20E-06	8,19E+01	1,99E+00
Hd (m)	3,34	Sbedl	1,38E-07	2,18E+00	1,72E-08	2,71E-01	1,91E+00
Hs (m)	0,5	Stotnum	7,47E-07	1,18E+01	3,96E-07	6,25E+00	5,54E+00
Tp (s)	3	Stotform	5,46E-06	8,61E+01	5,21E-06	8,22E+01	3,90E+00
Ug (m/s)	0,1	Média	3,10E-06	4,89E+01	2,81E-06	4,42E+01	4,72E+00

NM			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	2	Ssnum	7,39E-06	1,16E+02	5,85E-06	9,23E+01	2,42E+01
depth (m)	-1	Ssform	3,18E-05	5,02E+02	3,14E-05	4,95E+02	6,94E+00
Hd (m)	3,34	Sbedl	8,64E-07	1,36E+01	4,12E-07	6,50E+00	7,13E+00
Hs (m)	0,5	Stotnum	8,25E-06	1,30E+02	6,26E-06	9,88E+01	3,13E+01
Tp (s)	3	Stotform	3,27E-05	5,16E+02	3,18E-05	5,01E+02	1,41E+01
Ug (m/s)	0,1	Média	2,05E-05	3,23E+02	1,90E-05	3,00E+02	2,27E+01

NM			m3/s/m	m3/ano/2/m	m3/s/m	m3/ano/2/m	m3/ano/m
Hmare (m)	2	Ssnum	9,05E-05	1,43E+03	8,72E-05	1,38E+03	5,22E+01
depth (m)	-1,5	Ssform	8,45E-05	1,33E+03	8,38E-05	1,32E+03	1,07E+01
Hd (m)	3,34	Sbedl	3,18E-06	5,01E+01	2,19E-06	3,45E+01	1,55E+01
Hs (m)	0,5	Stotnum	9,37E-05	1,48E+03	8,94E-05	1,41E+03	6,77E+01
Tp (s)	3	Stotform	8,76E-05	1,38E+03	8,60E-05	1,36E+03	2,63E+01
Ug (m/s)	0,1	Média	9,07E-05	1,43E+03	8,77E-05	1,38E+03	4,70E+01

Taxa de transporte de sedimentos

Ssnum - Taxa de transporte por suspensão calculada por integração numérica

Ssform - Taxa de transporte por suspensão calculada pela fórmula de Van Rijn

Sbedl - Taxa de transporte por arrastamento

Stotnum - Taxa de transporte total (arrastamento e suspensão calculada por integração numérica)

Stotform - Taxa de transporte total (arrastamento e suspensão calculada pela fórmula de Van Rijn)

Média - Média da taxa de transporte calculada pelos dois métodos

Transporte resultante anual - considera a ocorrência em permanência das ondas e resulta da diferença entre os valores calculados com os ângulos 0° e 180° , sendo equivalente ao transporte sólido associado às correntes induzidas pelas ondas. Para obter o **transporte anual total** (m³/ano) os valores apresentados para a resultante anual devem ser integrados sobre uma faixa de 100 metros, que inclui a zona de rebentação.

PHI - ângulo compreendido entre a direcção das ondas e a das correntes

NM - Nível Médio

PMAV - Preia Mar de Águas Vivas

BMAV - Baixa Mar de Águas Vivas

Hmare (m) - Altura de maré

depth (m) - Profundidade referida ao ZH

Hd (m) - Altura de água (soma das anteriores)

Hs (m) - Altura significativa das ondas

Tp (s) - Período de pico das ondas

Ug (m/s) - Intensidade da corrente

D50 - Diâmetro mediano das areias (0.3 mm)

D90 - Diâmetro mediano das areias (0.5 mm)

ws - velocidade de queda das partículas (2 cm/s)

II- Cálculo do Transporte Litoral - Método do CERC

Segundo o CERC apresenta-se de seguida a equação para determinação do transporte litoral:

$$Ql = K [(\rho * g^{1/2}) / 16 * k^{1/2} * (\rho s - \rho) * (1 - n)] * H_b^{5/2} * \sin(2 \alpha_b)$$

em que:

Ql - Transporte Litoral (m^3/s)

K - Coeficiente de transporte de sedimentos

ρ - Massa volúmica da água (Kg/m^3)

ρs - Massa volúmica dos sedimentos (Kg/m^3)

k - Índice de rebentação

n - Índice de porosidade

H_b - Altura da onda na rebentação (m)

α_b - Ângulo de incidência da onda em relação à perpendicular à costa na rebentação ($^\circ$)

g - aceleração da gravidade (m/s^2)

Considerando os seguintes valores para os parâmetros anteriormente referidos, obteve-se:

	Condições de cálculo		
	1	2	3
K	0,39	0,39	0,39
ρ	1000	1000	1000
ρs	2650	2650	2650
k	0,78	0,78	0,78
n	0,40	0,40	0,40
H_b	0,50	0,50	0,50
α_b	0,40	1,00	2,00
g	9,81	9,81	9,81
Ql (m^3/s)	0,000224	0,000561	0,001121
Ql_{ano} (m^3/ano)*	2.546	6.365	12.722

(*) Considerando a ocorrência destas ondas durante 36% do ano.

III- Cálculo da Evolução da Linha de Costa - Modelo BNSPN

De acordo com o modelo BNSPN de evolução da linha de costa baseado na equação de Pelnard-Considère Considerando como parâmetros de entrada para as simulações os seguintes valores:

Condições das simulações					
	Simulações				
	1ª	2ª	3ª	4ª	
H_b (m)	0,5	0,5	0,5	0,5	(altura da onda na rebentação)
T (s)	2,0	2,0	2,0	2,0	(período da onda)
α_b (°C)	2,0	2,0	0,4	2,0	(ângulo de incidência da onda na rebentação)
d_c (m)	2,0	2,0	2,0	1,0	(profundidade de fecho do transporte litoral)
d_b (m)	0,0	0,0	0,0	0,0	(altura da berma)
K	0,39	0,39	0,39	0,39	(coeficiente de transporte de sedimentos)
Y (m)	100,0	100,0	100,0	100,0	(comprimento do esporão)
L (m)	6000,0	3000,0	6000,0	6000,0	(comprimento da praia)
s (m)	3000,0	1500,0	3000,0	3000,0	(localização do esporão)

Os resultados obtidos apresentam-se de forma gráfica nas Figuras 1 a 8.

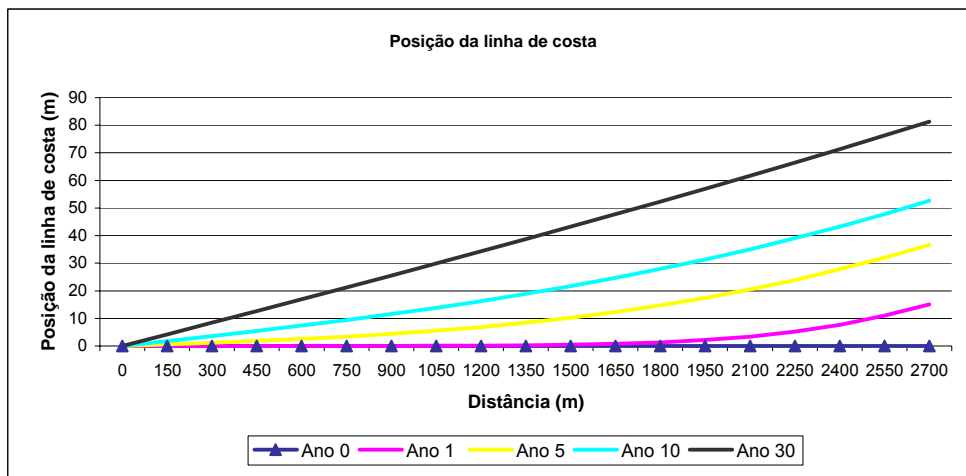


Figura 1. Evolução da posição da linha de costa nas condições da 1ª Simulação

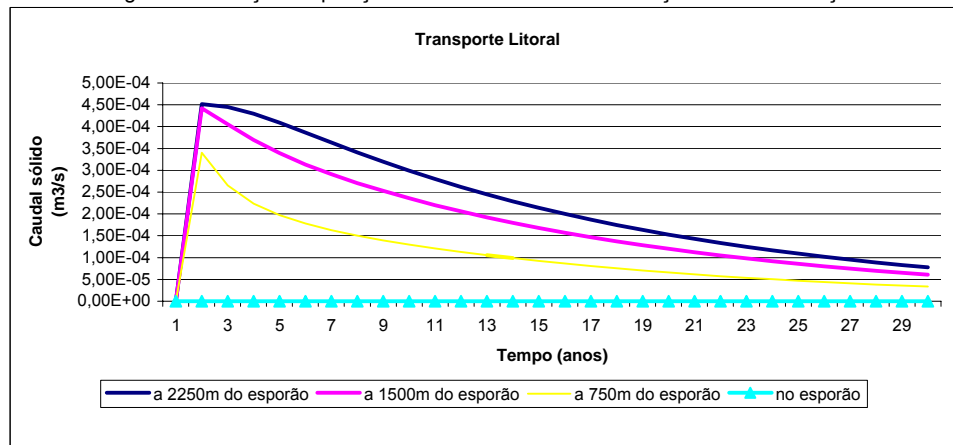


Figura 2. Transporte litoral nas condições da 1ª Simulação

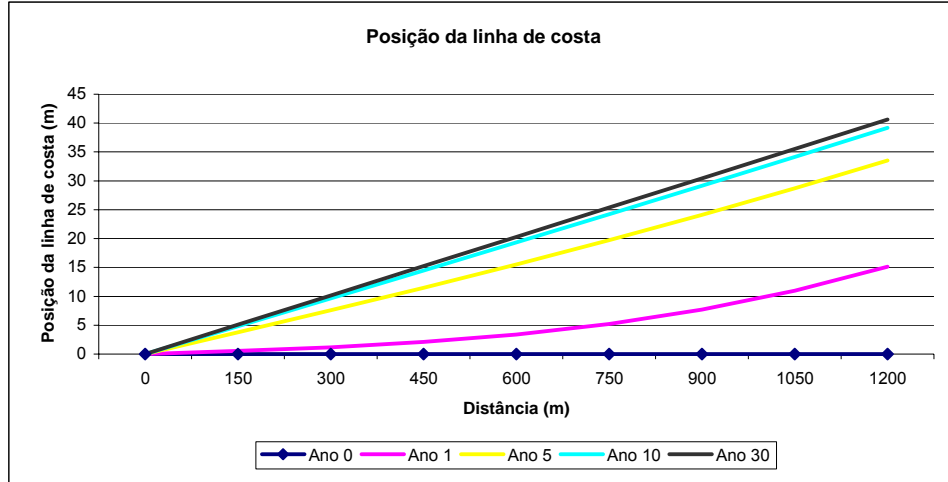


Figura 3. Evolução da posição da linha de costa nas condições da 2ª Simulação

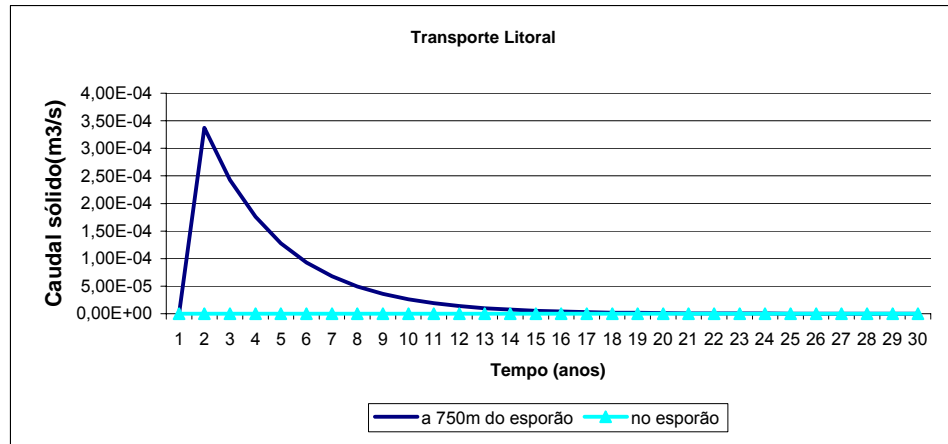


Figura 4. Transporte litoral nas condições da 2ª Simulação

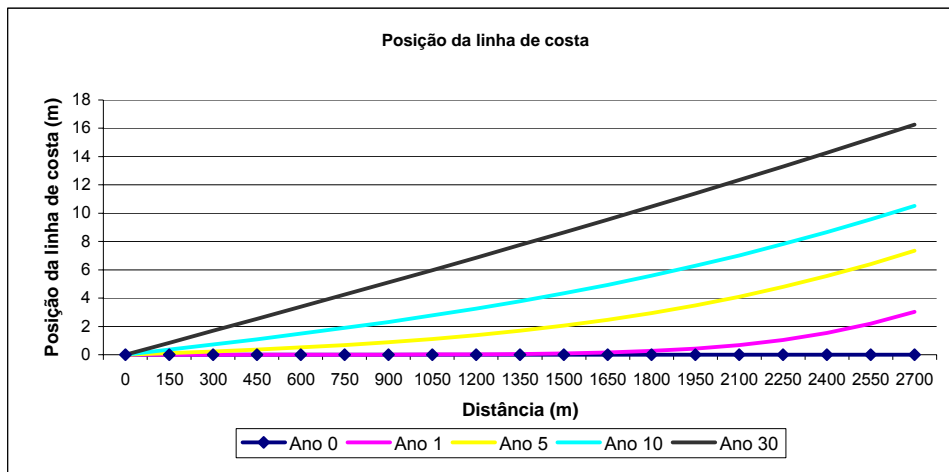


Figura 5. Evolução da posição da linha de costa nas condições da 3ª Simulação

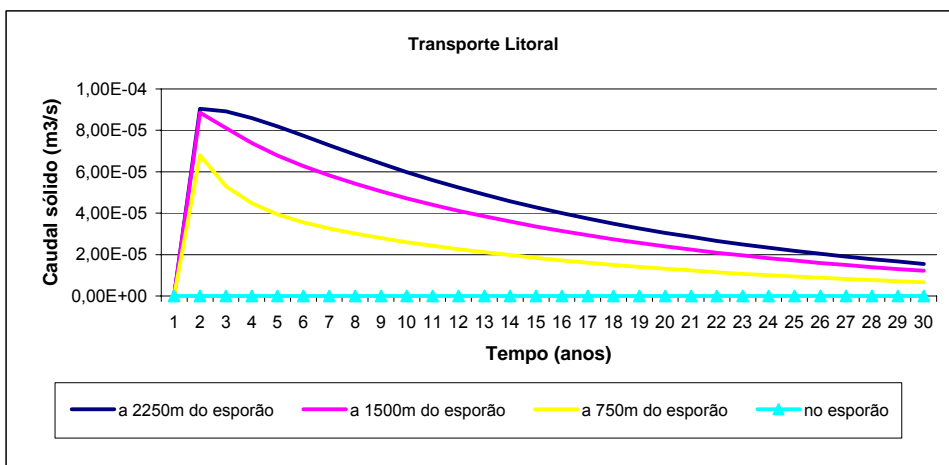


Figura 6. Transporte litoral nas condições da 3ª Simulação

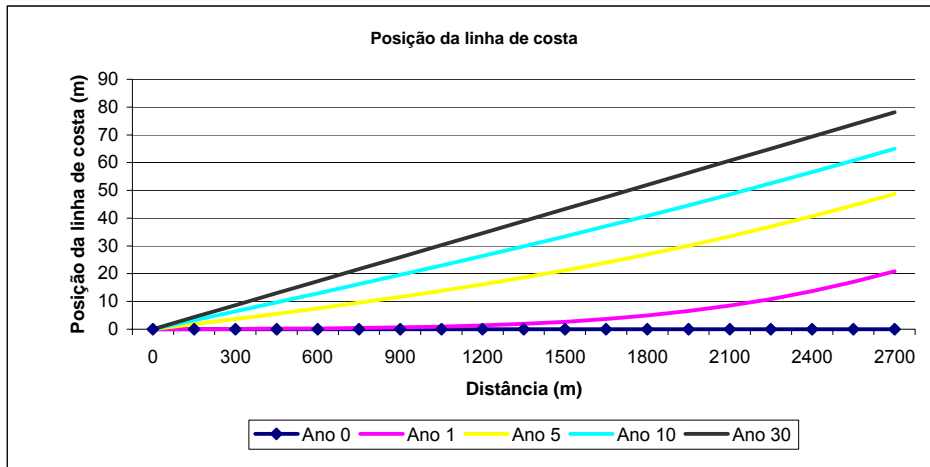


Figura 7. Evolução da posição da linha de costa nas condições da 4ª Simulação

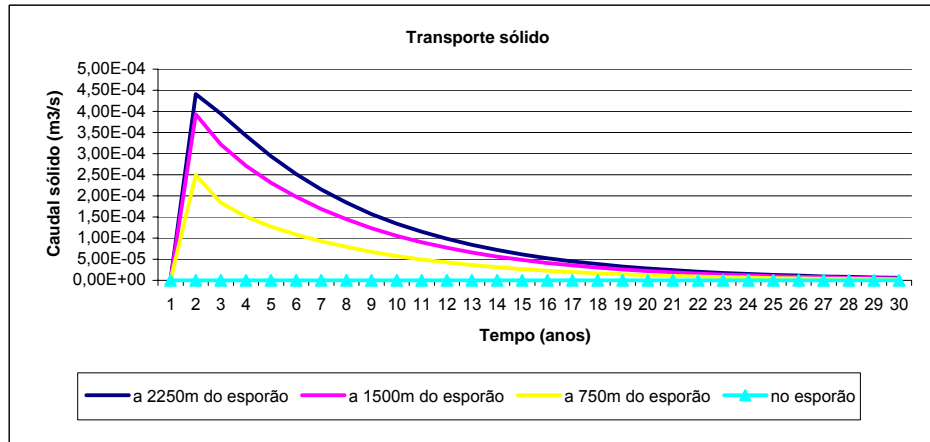


Figura 8. Transporte litoral nas condições da 4ª Simulação

ANEXO III

CÁLCULOS JUSTIFICATIVOS

- Passadiço
- Cortina de estacas prancha

Passadiço

Nodes...

Node Label	Node Coordinates		X Restraint	Y Restraint	Z Restraint	Node Temp deg C
	X m	Y m				
0	0.000	0.000				0
1	1.535	0.000	Fixed	Fixed		0
2	1.975	0.000		Fixed		0

Section Sections...

Prop Label Group Tag	Material	Area	Depth		Tf	lxx
			Width		Tw	lyy
W8x10	Steel	19.097 cm2	20.041 cm		0.521 cm	1,282.00 cm4
			10.008 cm		0.432 cm	86.99 cm4
W8x10	Steel	19.097 cm2	20.041 cm		0.521 cm	1,282.00 cm4
			10.008 cm		0.432 cm	86.99 cm4

Node Loads....

Node Label	Concentrated Loads and Moments			Load Case Factors				
	X	Y	Moment	# 1	# 2	# 3	# 4	# 5
0		-0.448 KN		1.000				
0		-6.300 KN			1.000			
0		-2.552 KN				1.000		
2		-0.448 KN		1.000				
2		-6.300 KN			1.000			
2		-2.552 KN				1.000		

Member Point Loads...

Member Label	Magnitude	Distance from "I" Node	Load Direction	Load Case Factors				
				# 1	# 2	# 3	# 4	# 5
0-1	-0.896 KN	1.000 m	Global Y	1.000				
0-1	-12.600 KN	1.000 m	Global Y		1.000			
0-1	-5.104 KN	1.000 m	Global Y			1.000		

Load Combinations...

Load Combination Description	Stress Increase	Gravity Load Factors		Load Combination Factors				
		X	Y	# 1	# 2	# 3	# 4	# 5
1,5(G+S)+0,6W	1.000			1.500	1.500	0.600		

Node Displacements & Reactions

Node Label	Load Combination	Node Displacements			Node Reactions		
		X cm	Y cm	Z Radians	X KN	Y KN	Z KN-m
0	1,5(G+S)+0,6W	0	-0.99128	0.02132	0	0	0
1	1,5(G+S)+0,6W	0	0	0.00441	0	103.95184	0
2	1,5(G+S)+0,6W	0	0	-0.00221	0	-57.33904	0

Member End Forces...

Member Label	Load Combination	Node "I" End Forces			Node "J" End Forces		
		Axial KN	Shear KN	Moment KN-m	Axial KN	Shear KN	Moment KN-m
0-1	1,5(G+S)+0,6W	0	-11.65320	0	0	34.95960	-30.35660
1-2	1,5(G+S)+0,6W	0	68.99224	30.35660	0	-68.99224	0

Member Overall Envelope Summary

Member Label	Section	Axial KN	Shear KN	Moment KN-m	Deflection cm	Maximum Stress Ratio
0-1	W8x10		34.960	30.357	1.009	
1-2	W8x10		68.992	30.357	0.016	

--> Deflection values listed are the maximum of a sampling of 31 points across the member

Cortina de estacas prancha

zona mais desfavorável

General Data

Licensed User :
 File Name : cortina_poenteabrigo1.spw
 Problem Name : zona mais desfavorável
 Length (m) : 14.000
 Number of Elements : 100
 Number of Layers : 4
 Number of Loading Steps : 1
 Profile from Catalogue : 7

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	0.500	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	14.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	0.500	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	14.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	0.500	4.200	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
3	4.200	6.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
4	6.000	14.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	0.500	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	14.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	1.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	1.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000

, zona mais desfavorável

Data of Axial Forces and Moment

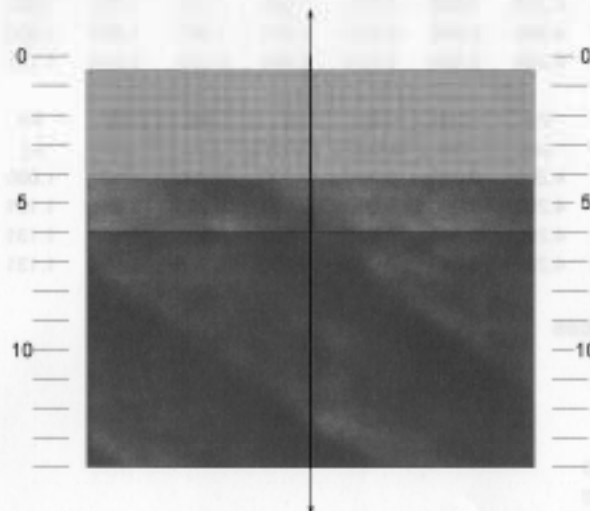
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	1.120	1.120	-30.300
1	1.120	1.120	-30.300

Catalogue of Profiles

No	Profile Name	Area (m ² /m)	Weight (kN/m ³)	E (GN/m ²)	h (m)	i (m)	EI (kNm ² /m)
1	AU 20 Arcelor	0.015970	78.000	210.000	0.443000	0.163516	89669.5
2	HZ 775 D 10/13 Profi	0.033300	78.000	210.000	0.787000	0.270657	512274.0
3	HZ 975 D 10/13 Profi	0.036200	78.000	210.000	0.975000	0.334643	851319.0
4	HZ 975 D 22/13 Profi	0.048300	78.000	210.000	0.987000	0.373518	1415106.0
5	HZ 975 A 22/13 Profi	0.040000	78.000	210.000	0.975000	0.359218	1083915.0
6	Larssen VI	0.037400	78.000	210.000	0.440000	0.156619	192654.0
7	AZ 50	0.032200	78.000	210.000	0.483000	0.193898	254226.0
8	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
9	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
10	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
11	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
12	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
13	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
14	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
15	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
16	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
17	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
18	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
19	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
20	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4

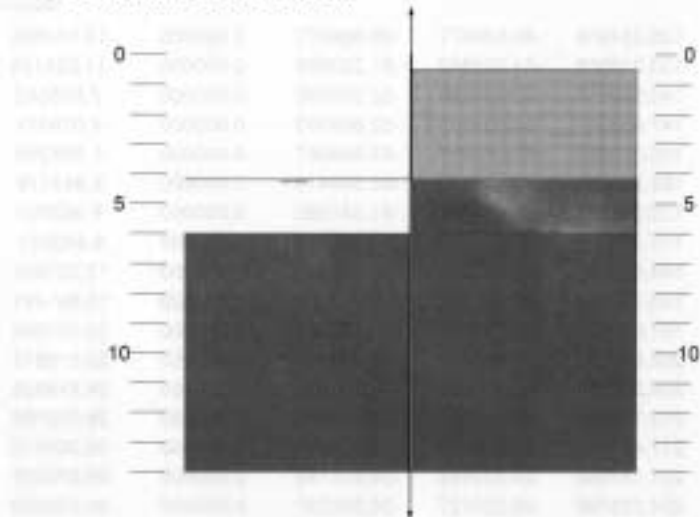
Cross Sections

Step 0 :



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Step 1 :



Results after Step 1 :

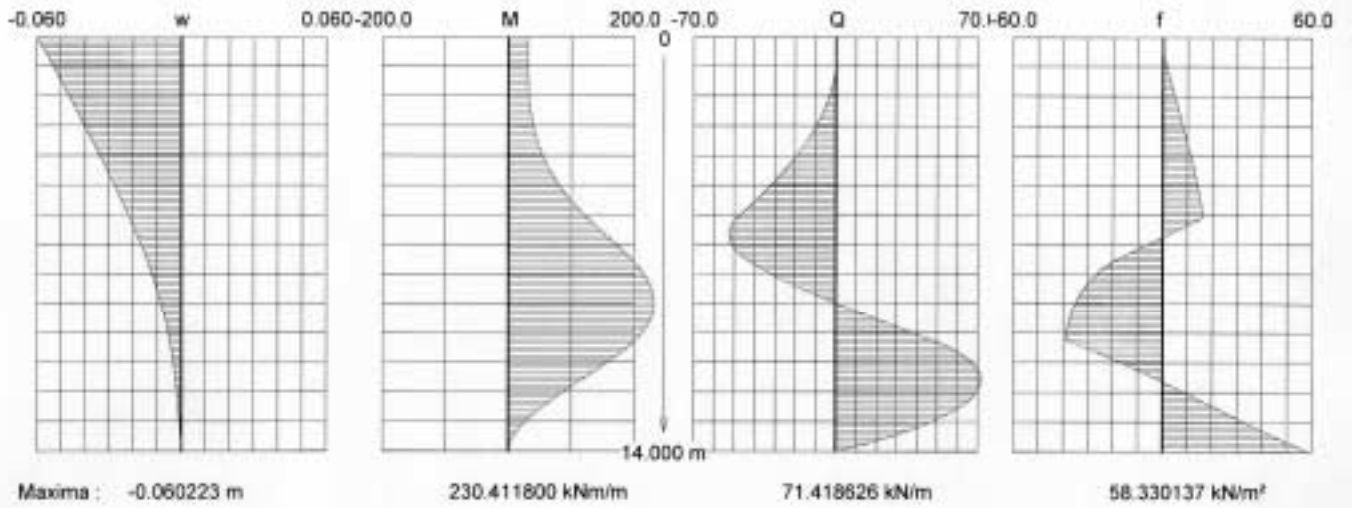
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m²)
0	0.00000	-0.060223	30.300000	0.000000	0.000000	0.000000	0.000000
1	0.125000	-0.059379	30.299055	0.000000	0.000000	0.000000	0.000000
2	0.250000	-0.058537	30.298112	0.000000	0.000000	0.000000	0.000000
3	0.375000	-0.057696	30.297171	0.000000	0.000000	0.000000	0.000000
4	0.500000	-0.056858	30.296232	0.000000	0.000000	0.000000	0.000000
5	0.6242308	-0.055906	30.297503	-0.032858	-0.032858	0.000000	-0.230894
6	0.784815	-0.054956	30.308129	-0.131432	-0.131432	0.000000	-0.692686
7	0.926923	-0.054009	30.337462	-0.295722	-0.295722	0.000000	-1.154468
8	1.069231	-0.053064	30.394853	-0.525728	-0.525728	0.000000	-1.616255
9	1.211538	-0.052121	30.489654	-0.821451	-0.821451	0.000000	-2.078064
10	1.353846	-0.051181	30.631218	-1.182889	-1.182889	0.000000	-2.539829
11	1.496154	-0.050244	30.828896	-1.610043	-1.610043	0.000000	-3.001616
12	1.638462	-0.049309	31.092039	-2.102914	-2.102914	0.000000	-3.463410
13	1.780769	-0.048376	31.430001	-2.661500	-2.661500	0.000000	-3.925218
14	1.923077	-0.047446	31.852133	-3.285803	-3.285803	0.000000	-4.386985
15	2.065385	-0.046518	32.367786	-3.975821	-3.975821	0.000000	-4.848765
16	2.207692	-0.045593	32.986314	-4.731556	-4.731556	0.000000	-5.310596
17	2.350000	-0.044670	33.717067	-5.553006	-5.553006	0.000000	-5.772339
18	2.492308	-0.043751	34.569397	-6.440173	-6.440173	0.000000	-6.234133
19	2.634615	-0.042834	35.552658	-7.393056	-7.393056	0.000000	-6.695967
20	2.776923	-0.041920	36.676200	-8.411654	-8.411654	0.000000	-7.157700
21	2.919231	-0.041008	37.949375	-9.495969	-9.495969	0.000000	-7.619494
22	3.061538	-0.040100	39.381537	-10.646000	-10.646000	0.000000	-8.081338
23	3.203846	-0.039195	40.982036	-11.861747	-11.861747	0.000000	-8.543069
24	3.346154	-0.038293	42.760225	-13.143210	-13.143210	0.000000	-9.004856
25	3.488462	-0.037395	44.725455	-14.490389	-14.490389	0.000000	-9.466643
26	3.630769	-0.036500	46.887080	-15.903284	-15.903284	0.000000	-9.928500
27	3.773077	-0.035609	49.254451	-17.381895	-17.381895	0.000000	-10.390217
28	3.915385	-0.034722	51.836919	-18.926222	-18.926222	0.000000	-10.852004
29	4.057692	-0.033839	54.643838	-20.536266	-20.536266	0.000000	-11.313878
30	4.200000	-0.032960	57.684559	-22.212025	-22.212025	0.000000	-11.775578
31	4.338462	-0.032110	60.875776	-23.897086	-23.897086	0.000000	-12.168844
32	4.476923	-0.031264	64.303446	-25.627392	-25.627392	0.000000	-12.496703
33	4.615385	-0.030423	67.973835	-27.402943	-27.402943	0.000000	-12.823381
34	4.753846	-0.029587	71.893207	-29.223739	-29.223739	0.000000	-13.150244
35	4.892308	-0.028756	76.067828	-31.089779	-31.089779	0.000000	-13.476911
36	5.030769	-0.027931	80.503963	-33.001065	-33.001065	0.000000	-13.803798
37	5.169231	-0.027113	85.207877	-34.957596	-34.957596	0.000000	-14.130455
38	5.307692	-0.026300	90.185834	-36.959372	-36.959372	0.000000	-14.457327
39	5.446154	-0.025495	95.444100	-39.006392	-39.006392	0.000000	-14.783984
40	5.584615	-0.024697	100.988940	-41.098658	-41.098658	0.000000	-15.110869
41	5.723077	-0.023906	106.826620	-43.236169	-43.236169	0.000000	-15.437528
42	5.861538	-0.023124	112.963404	-45.418924	-45.418924	0.000000	-15.764403
43	6.000000	-0.022350	119.405557	-47.648925	-47.648925	0.000000	-16.091065

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44	6.140351	-0.021574	126.234934	-49.684077	-49.684077	0.000000	-14.514695
45	6.280702	-0.020809	133.315968	-51.232868	-51.232868	0.000000	-11.035126
46	6.421053	-0.020053	140.580116	-52.293296	-52.293296	0.000000	-7.555543
47	6.561404	-0.019309	147.958837	-52.865363	-52.865363	0.000000	-4.075974
48	6.701754	-0.018578	155.383590	-52.949087	-52.949087	0.000000	-0.596395
49	6.842105	-0.017855	162.785834	-52.544410	-52.544410	0.000000	2.883179
50	6.982456	-0.017147	170.097027	-51.651390	-51.651390	0.000000	6.362762
51	7.122807	-0.016452	177.248627	-50.270009	-50.270009	0.000000	9.842331
52	7.263158	-0.015770	184.172094	-48.400266	-48.400266	0.000000	13.321907
53	7.403509	-0.015103	190.798885	-46.042160	-46.042160	0.000000	16.801491
54	7.543860	-0.014451	197.060460	-43.195693	-43.195693	0.000000	20.281060
55	7.684211	-0.013814	202.897585	-39.993499	-39.993499	0.000000	22.815612
56	7.824561	-0.013192	208.265312	-36.506526	-36.506526	0.000000	24.844838
57	7.964912	-0.012587	213.125460	-32.760254	-32.760254	0.000000	26.692165
58	8.105263	-0.011999	217.443335	-28.778859	-28.778859	0.000000	28.367415
59	8.245614	-0.011427	221.187540	-24.585184	-24.585184	0.000000	29.879908
60	8.385965	-0.010872	224.329789	-20.200727	-20.200727	0.000000	31.239229
61	8.526316	-0.010335	226.844721	-15.645627	-15.645627	0.000000	32.455059
62	8.666667	-0.009815	228.709703	-10.938663	-10.938663	0.000000	33.537089
63	8.807018	-0.009313	229.904644	-6.097251	-6.097251	0.000000	34.495030
64	8.947368	-0.008828	230.411800	-1.137459	-1.137459	0.000000	35.338739
65	9.087719	-0.008362	230.215592	3.925983	3.925983	0.000000	36.076993
66	9.228070	-0.007913	229.302413	9.079655	9.079655	0.000000	36.719881
67	9.368421	-0.007482	227.660452	14.311419	14.311419	0.000000	37.276286
68	9.508772	-0.007069	225.279512	19.610381	19.610381	0.000000	37.755071
69	9.649123	-0.006673	222.150842	24.966845	24.966845	0.000000	38.164773
70	9.789474	-0.006295	218.266972	30.372262	30.372262	0.000000	38.513562
71	9.929825	-0.005933	213.621554	35.819168	35.819168	0.000000	38.809171
72	10.070175	-0.005588	208.209217	41.301120	41.301120	0.000000	39.059152
73	10.210526	-0.005259	202.025429	46.812616	46.812616	0.000000	39.268375
74	10.350877	-0.004945	195.106383	51.778780	51.778780	0.000000	35.383888
75	10.491228	-0.004647	187.531608	56.157001	56.157001	0.000000	31.194797
76	10.631579	-0.004363	179.382823	59.958663	59.958663	0.000000	27.086818
77	10.771930	-0.004093	170.740116	63.195595	63.195595	0.000000	23.063120
78	10.912281	-0.003836	161.681904	65.879837	65.879837	0.000000	19.125208
79	11.052632	-0.003592	152.284911	68.023409	68.023409	0.000000	15.272937
80	11.192982	-0.003360	142.624195	69.638090	69.638090	0.000000	11.504674
81	11.333333	-0.003138	132.773190	70.735207	70.735207	0.000000	7.816952
82	11.473684	-0.002927	122.803785	71.325437	71.325437	0.000000	4.205385
83	11.614035	-0.002726	112.786432	71.418628	71.418628	0.000000	0.683971
84	11.754386	-0.002533	102.790270	71.023611	71.023611	0.000000	-2.814479
85	11.894737	-0.002348	92.883278	70.148072	70.148072	0.000000	-6.238210
86	12.035088	-0.002171	83.132450	68.798394	68.798394	0.000000	-9.616447
87	12.175439	-0.001999	73.603982	66.979543	66.979543	0.000000	-12.959302
88	12.315789	-0.001834	64.363480	64.694975	64.694975	0.000000	-16.277649
89	12.456140	-0.001673	55.476175	61.946550	61.946550	0.000000	-19.582511
90	12.596491	-0.001517	47.007156	58.734483	58.734483	0.000000	-22.885957
91	12.736842	-0.001365	39.021596	55.057307	55.057307	0.000000	-26.199856
92	12.877193	-0.001215	31.584995	50.911870	50.911870	0.000000	-29.536213
93	13.017544	-0.001068	24.763412	46.293353	46.293353	0.000000	-32.906905
94	13.157895	-0.000923	18.623693	41.195321	41.195321	0.000000	-36.323446
95	13.298246	-0.000779	13.233699	35.609800	35.609800	0.000000	-39.796802
96	13.438598	-0.000637	8.662509	29.527389	29.527389	0.000000	-43.337449
97	13.578947	-0.000495	4.980610	22.937408	22.937408	0.000000	-46.953588
98	13.719298	-0.000353	2.260067	15.828064	15.828064	0.000000	-50.654017
99	13.859649	-0.000212	0.574663	8.186693	8.186693	0.000000	-54.444721
100	14.000000	-0.000071	0.000000	0.000000	0.000000	0.000000	-58.330137

zona mais desfavorável

Results after Step 1 :



zona corrente

General Data

Licensed User :
 File Name : cortina_poenteabrigo2.spw
 Problem Name : zona corrente
 Length (m) : 12.000
 Number of Elements : 100
 Number of Layers : 4
 Number of Loading Steps : 1
 Profile from Catalogue : 6

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.000	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	12.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.000	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	12.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.000	4.200	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
3	4.200	6.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
4	6.000	12.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.000	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	12.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	1.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	1.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000

zona corrente

Data of Axial Forces and Moment

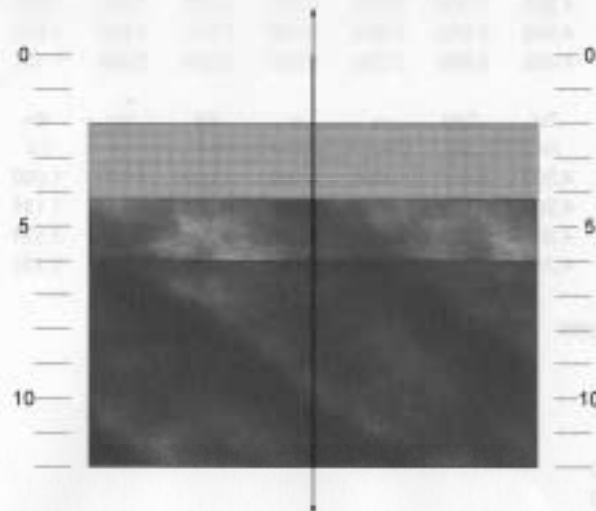
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	1.120	1.120	-17.580
1	1.120	1.120	-17.580

Catalogue of Profiles

No	Profile Name	Area (m ² /m)	Weight (kN/m ³)	E (GN/m ²)	h (m)	i (m)	EI (kNm ² /m)
1	AU 20 Arcelor	0.015970	78.000	210.000	0.443000	0.163516	89689.5
2	HZ 775 D 10/13 Profi	0.033300	78.000	210.000	0.787000	0.270657	512274.0
3	HZ 975 D 10/13 Profi	0.036200	78.000	210.000	0.975000	0.334643	851319.0
4	HZ 975 D 22/13 Profi	0.048300	78.000	210.000	0.987000	0.373518	1415106.0
5	HZ 975 A 22/13 Profi	0.040000	78.000	210.000	0.975000	0.359218	1083915.0
6	AZ 25	0.018500	78.000	210.000	0.426000	0.168057	109725.0
7	Larsen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
8	Larsen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
9	Larsen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
10	Larsen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
11	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
12	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
13	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
14	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
15	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
16	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
17	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
18	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
19	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
20	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4

Cross Sections

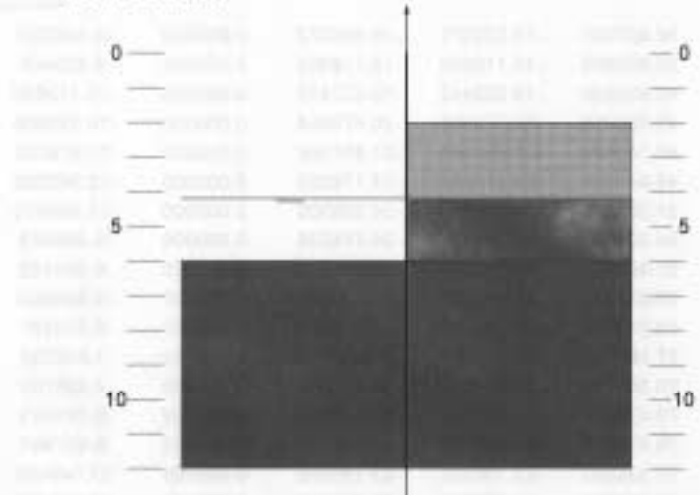
Step 0:



Step	NA	NB	MA
0	000.0	000.0	000.0
1	000.0	000.0	000.0
2	000.0	000.0	000.0
3	000.0	000.0	000.0
4	000.0	000.0	000.0
5	000.0	000.0	000.0
6	000.0	000.0	000.0
7	000.0	000.0	000.0
8	000.0	000.0	000.0
9	000.0	000.0	000.0
10	000.0	000.0	000.0

zona corrente

Step 1 :



Results after Step 1 :

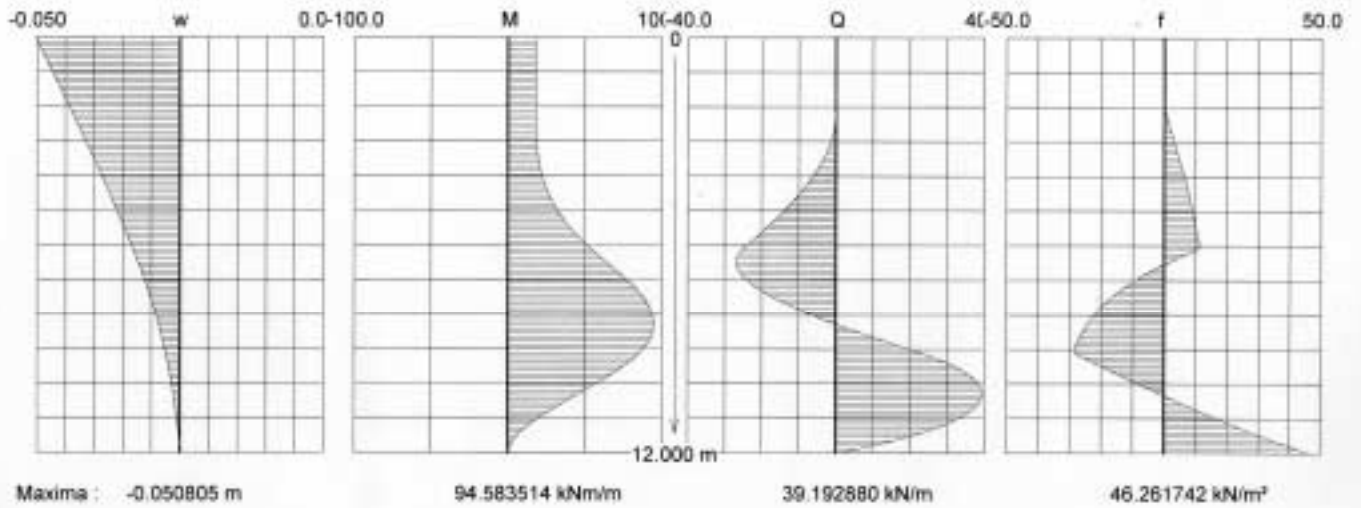
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m ²)
0	0.000000	-0.050805	17.580000	0.000000	0.000000	0.000000	0.000000
1	0.117647	-0.050083	17.579191	0.000000	0.000000	0.000000	0.000000
2	0.235294	-0.049362	17.578384	0.000000	0.000000	0.000000	0.000000
3	0.352941	-0.048644	17.577580	0.000000	0.000000	0.000000	0.000000
4	0.470588	-0.047929	17.576778	0.000000	0.000000	0.000000	0.000000
5	0.588235	-0.047215	17.575979	0.000000	0.000000	0.000000	0.000000
6	0.705882	-0.046504	17.575182	0.000000	0.000000	0.000000	0.000000
7	0.823529	-0.045795	17.574388	0.000000	0.000000	0.000000	0.000000
8	0.941176	-0.045088	17.573596	0.000000	0.000000	0.000000	0.000000
9	1.058824	-0.044383	17.572807	0.000000	0.000000	0.000000	0.000000
10	1.176471	-0.043680	17.572020	0.000000	0.000000	0.000000	0.000000
11	1.294118	-0.042980	17.571236	0.000000	0.000000	0.000000	0.000000
12	1.411765	-0.042282	17.570454	0.000000	0.000000	0.000000	0.000000
13	1.529412	-0.041586	17.569675	0.000000	0.000000	0.000000	0.000000
14	1.647059	-0.040893	17.568898	0.000000	0.000000	0.000000	0.000000
15	1.764706	-0.040201	17.568124	0.000000	0.000000	0.000000	0.000000
16	1.882353	-0.039512	17.567352	0.000000	0.000000	0.000000	0.000000
17	2.000000	-0.038825	17.566582	0.000000	0.000000	0.000000	0.000000
18	2.122222	-0.038114	17.567267	-0.024237	-0.024237	0.000000	-0.198303
19	2.244444	-0.037405	17.573879	-0.096949	-0.096949	0.000000	-0.594917
20	2.366667	-0.036698	17.592342	-0.218136	-0.218136	0.000000	-0.991524
21	2.488889	-0.035994	17.628583	-0.387798	-0.387798	0.000000	-1.388146
22	2.611111	-0.035292	17.688525	-0.605934	-0.605934	0.000000	-1.784752
23	2.733333	-0.034593	17.778093	-0.872544	-0.872544	0.000000	-2.181359
24	2.855556	-0.033896	17.903212	-1.187630	-1.187630	0.000000	-2.577960
25	2.977778	-0.033201	18.069807	-1.551190	-1.551190	0.000000	-2.974587
26	3.100000	-0.032509	18.283801	-1.963225	-1.963225	0.000000	-3.371202
27	3.222222	-0.031820	18.551121	-2.423735	-2.423735	0.000000	-3.767816
28	3.344444	-0.031133	18.877690	-2.932719	-2.932719	0.000000	-4.164422
29	3.466667	-0.030448	19.269434	-3.490178	-3.490178	0.000000	-4.560999
30	3.588889	-0.029767	19.732277	-4.096111	-4.096111	0.000000	-4.957643
31	3.711111	-0.029087	20.272144	-4.750520	-4.750520	0.000000	-5.354265
32	3.833333	-0.028411	20.894960	-5.453403	-5.453403	0.000000	-5.750871
33	3.955556	-0.027737	21.606648	-6.204760	-6.204760	0.000000	-6.147427
34	4.077778	-0.027067	22.413138	-7.004593	-7.004593	0.000000	-6.544100
35	4.200000	-0.026399	23.320348	-7.852900	-7.852900	0.000000	-6.940706
36	4.320000	-0.025747	24.314384	-8.726572	-8.726572	0.000000	-7.280600
37	4.440000	-0.025098	25.415305	-9.634228	-9.634228	0.000000	-7.563800
38	4.560000	-0.024452	26.627187	-10.575868	-10.575868	0.000000	-7.847000
39	4.680000	-0.023810	27.954109	-11.551492	-11.551492	0.000000	-8.130200
40	4.800000	-0.023171	29.400150	-12.561100	-12.561100	0.000000	-8.413400
41	4.920000	-0.022537	30.969388	-13.604892	-13.604892	0.000000	-8.696600
42	5.040000	-0.021906	32.665898	-14.682268	-14.682268	0.000000	-8.979800
43	5.160000	-0.021280	34.493762	-15.793828	-15.793828	0.000000	-9.263000

zona corrente

44	5.280000	-0.020658	36.457057	-16.939372	-16.939372	0.000000	-9.546200
45	5.400000	-0.020041	38.559863	-18.118900	-18.118900	0.000000	-9.829400
46	5.520000	-0.019429	40.806266	-19.332412	-19.332412	0.000000	-10.112600
47	5.640000	-0.018822	43.200316	-20.579908	-20.579908	0.000000	-10.395800
48	5.760000	-0.018221	45.746120	-21.861388	-21.861388	0.000000	-10.679000
49	5.880000	-0.017628	48.447749	-23.176852	-23.176852	0.000000	-10.962200
50	6.000000	-0.017038	51.309278	-24.526300	-24.526300	0.000000	-11.245400
51	6.120000	-0.016456	54.323069	-25.714238	-25.714238	0.000000	-9.899483
52	6.240000	-0.015881	57.457980	-26.545170	-26.545170	0.000000	-6.924433
53	6.360000	-0.015314	60.671201	-27.019098	-27.019098	0.000000	-3.949400
54	6.480000	-0.014755	63.919882	-27.136022	-27.136022	0.000000	-0.974367
55	6.600000	-0.014204	67.161787	-26.906007	-26.906007	0.000000	1.916792
56	6.720000	-0.013662	70.358032	-26.374869	-26.374869	0.000000	4.426150
57	6.840000	-0.013129	73.473592	-25.561067	-25.561067	0.000000	6.781683
58	6.960000	-0.012606	76.475821	-24.482523	-24.482523	0.000000	8.987867
59	7.080000	-0.012093	79.333393	-23.156592	-23.156592	0.000000	11.049425
60	7.200000	-0.011590	82.018228	-21.600039	-21.600039	0.000000	12.971275
61	7.320000	-0.011098	84.503420	-19.829011	-19.829011	0.000000	14.758567
62	7.440000	-0.010618	86.764164	-17.859022	-17.859022	0.000000	16.416575
63	7.560000	-0.010148	88.777475	-15.704930	-15.704930	0.000000	17.950767
64	7.680000	-0.009690	90.522113	-13.380924	-13.380924	0.000000	19.366717
65	7.800000	-0.009244	91.978900	-10.900515	-10.900515	0.000000	20.670075
66	7.920000	-0.008810	93.128637	-8.276524	-8.276524	0.000000	21.866592
67	8.040000	-0.008389	93.958021	-5.521083	-5.521083	0.000000	22.962008
68	8.160000	-0.007979	94.445565	-2.645632	-2.645632	0.000000	23.962092
69	8.280000	-0.007582	94.583514	0.339073	0.339073	0.000000	24.872542
70	8.400000	-0.007198	94.357362	3.422951	3.422951	0.000000	25.698983
71	8.520000	-0.006826	93.755773	6.596585	6.596585	0.000000	26.446950
72	8.640000	-0.006466	92.768503	9.851198	9.851198	0.000000	27.121775
73	8.760000	-0.006118	91.388324	13.178631	13.178631	0.000000	27.728608
74	8.880000	-0.005782	89.600951	16.571316	16.571316	0.000000	28.272375
75	9.000000	-0.005458	87.404975	20.022240	20.022240	0.000000	28.757700
76	9.120000	-0.005145	84.798376	23.415232	23.415232	0.000000	28.274933
77	9.240000	-0.004844	81.803923	26.486690	26.486690	0.000000	25.595483
78	9.360000	-0.004553	78.460401	29.233250	29.233250	0.000000	22.888000
79	9.480000	-0.004273	74.806972	31.652001	31.652001	0.000000	20.156258
80	9.600000	-0.004002	70.883128	33.740345	33.740345	0.000000	17.402867
81	9.720000	-0.003741	66.728663	35.495862	35.495862	0.000000	14.629308
82	9.840000	-0.003488	62.383657	36.916185	36.916185	0.000000	11.836025
83	9.960000	-0.003244	57.888480	37.998866	37.998866	0.000000	9.022342
84	10.080000	-0.003007	53.283808	38.741256	38.741256	0.000000	6.186583
85	10.200000	-0.002777	48.610652	39.140391	39.140391	0.000000	3.326125
86	10.320000	-0.002554	43.910405	39.192880	39.192880	0.000000	0.437408
87	10.440000	-0.002336	39.224900	38.894810	38.894810	0.000000	-2.483917
88	10.560000	-0.002124	34.596474	38.241653	38.241653	0.000000	-5.442975
89	10.680000	-0.001916	30.068050	37.228190	37.228190	0.000000	-8.445525
90	10.800000	-0.001712	25.683224	35.848446	35.848446	0.000000	-11.497867
91	10.920000	-0.001511	21.486354	34.095638	34.095638	0.000000	-14.606733
92	11.040000	-0.001313	17.522688	31.962140	31.962140	0.000000	-17.779150
93	11.160000	-0.001118	13.838350	29.439465	29.439465	0.000000	-21.022292
94	11.280000	-0.000924	10.480670	26.518265	26.518265	0.000000	-24.343333
95	11.400000	-0.000731	7.498057	23.188352	23.188352	0.000000	-27.749275
96	11.520000	-0.000540	4.940217	19.438739	19.438739	0.000000	-31.246775
97	11.640000	-0.000350	2.858217	15.257706	15.257706	0.000000	-34.841942
98	11.760000	-0.000159	1.304568	10.632891	10.632891	0.000000	-38.540125
99	11.880000	0.000031	0.333297	5.551409	5.551409	0.000000	-42.345683
100	12.000000	0.000221	0.000000	0.000000	0.000000	0.000000	-46.261742

zona corrente

Results after Step 1 :



Cortina_nascente_abrigo.spw

General Data

Licensed User :
 File Name : Cortina_nascente_abrigo.spw
 Problem Name : Cortina_nascente_abrigo.spw
 Length (m) : 11.000
 Number of Elements : 100
 Number of Layers : 4
 Number of Loading Steps : 1
 Profile from Catalogue : 2

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.500	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	11.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.500	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	11.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.500	4.200	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
3	4.200	6.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
4	6.000	11.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	2.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	2.500	4.200	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
3	4.200	6.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020
4	6.000	11.000	11.000	18.000	4.200	0.000	0.000	0.000	0.295	3.394	1.131	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	0.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	0.000	0.000	1.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000

Cortina_nascente_abrigo.spw

Data of Axial Forces and Moment

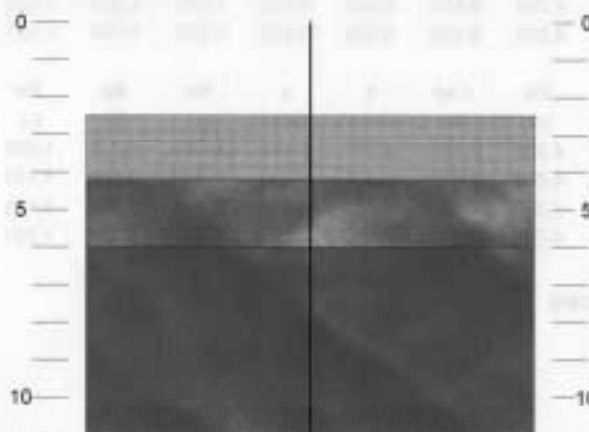
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	0.000	0.000	-4.350
1	0.000	0.000	-4.500

Catalogue of Profiles

No	Profile Name	Area (m ² /m)	Weight (kN/m ²)	E (GN/m ²)	h (m)	i (m)	EI (kNm ² /m)
1	AU 20 Arcelor	0.159700	78.000	210.000	0.443000	0.051708	89670.0
2	AZ 25 Arbed	0.185000	78.000	210.000	0.426000	0.053144	109725.0
3	0.295	11.000000	18.000	4.200	0.000000	0.000000	0.0
4	0.295	11.000000	18.000	4.200	0.000000	0.000000	0.0
5	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
6	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
7	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
8	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
9	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
10	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
11	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
12	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
13	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
14	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
15	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
16	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
17	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
18	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
19	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
20	Hoesch 215	0.000000	0.000	0.000	0.000000	0.000000	112778.4

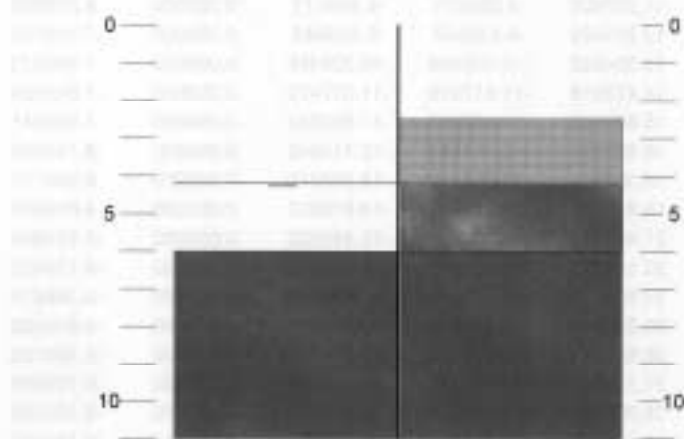
Cross Sections

Step 0 :



Cortina_nascente_abrigo.spw

Step 1 :



Results after Step 1 :

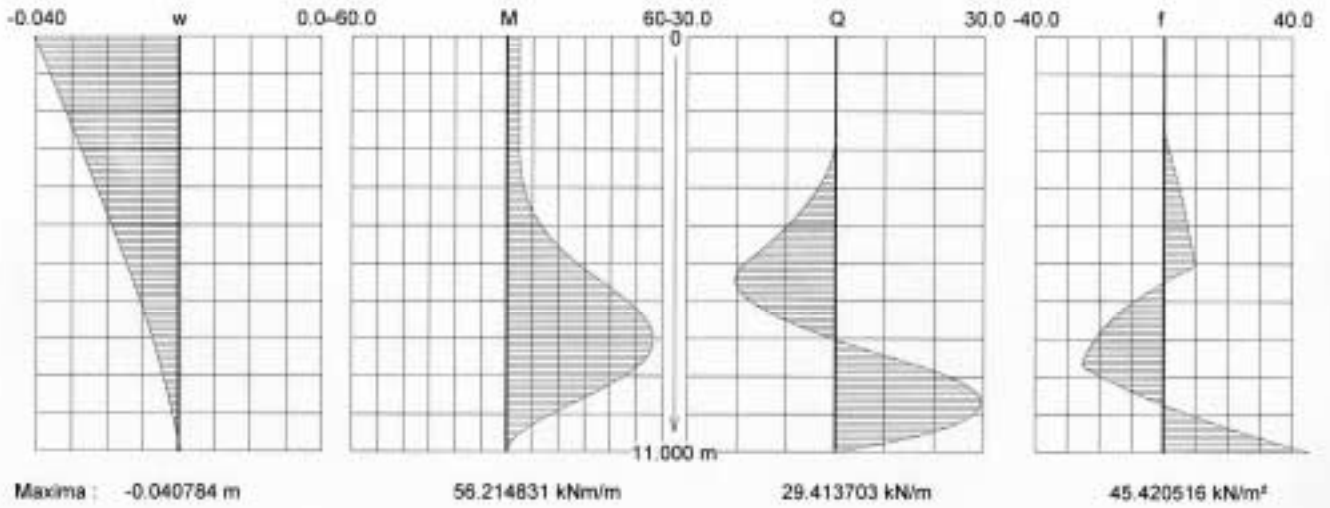
i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m ²)
0	0.000000	-0.040784	4.500000	0.000000	0.000000	0.000000	0.000000
1	0.108696	-0.040297	4.500000	0.000000	0.000000	0.000000	0.000000
2	0.217391	-0.039811	4.500000	0.000000	0.000000	0.000000	0.000000
3	0.326087	-0.039326	4.500000	0.000000	0.000000	0.000000	0.000000
4	0.434783	-0.038841	4.500000	0.000000	0.000000	0.000000	0.000000
5	0.543478	-0.038357	4.500000	0.000000	0.000000	0.000000	0.000000
6	0.652174	-0.037873	4.500000	0.000000	0.000000	0.000000	0.000000
7	0.760870	-0.037389	4.500000	0.000000	0.000000	0.000000	0.000000
8	0.869565	-0.036905	4.500000	0.000000	0.000000	0.000000	0.000000
9	0.978261	-0.036424	4.500000	0.000000	0.000000	0.000000	0.000000
10	1.086957	-0.035942	4.500000	0.000000	0.000000	0.000000	0.000000
11	1.195652	-0.035460	4.500000	0.000000	0.000000	0.000000	0.000000
12	1.304348	-0.034979	4.500000	0.000000	0.000000	0.000000	0.000000
13	1.413043	-0.034499	4.500000	0.000000	0.000000	0.000000	0.000000
14	1.521739	-0.034019	4.500000	0.000000	0.000000	0.000000	0.000000
15	1.630435	-0.033539	4.500000	0.000000	0.000000	0.000000	0.000000
16	1.739130	-0.033060	4.500000	0.000000	0.000000	0.000000	0.000000
17	1.847826	-0.032582	4.500000	0.000000	0.000000	0.000000	0.000000
18	1.956522	-0.032103	4.500000	0.000000	0.000000	0.000000	0.000000
19	2.065217	-0.031626	4.500000	0.000000	0.000000	0.000000	0.000000
20	2.173913	-0.031149	4.500000	0.000000	0.000000	0.000000	0.000000
21	2.282609	-0.030672	4.500000	0.000000	0.000000	0.000000	0.000000
22	2.391304	-0.030196	4.500000	0.000000	0.000000	0.000000	0.000000
23	2.500000	-0.029720	4.500000	0.000000	0.000000	0.000000	0.000000
24	2.613333	-0.029225	4.501181	-0.020840	-0.020840	0.000000	-0.183883
25	2.726667	-0.028730	4.507096	-0.083360	-0.083360	0.000000	-0.551644
26	2.840000	-0.028235	4.522438	-0.187561	-0.187561	0.000000	-0.919423
27	2.953333	-0.027741	4.551961	-0.333442	-0.333442	0.000000	-1.287189
28	3.066667	-0.027248	4.600380	-0.521003	-0.521003	0.000000	-1.654940
29	3.180000	-0.026755	4.672417	-0.750244	-0.750244	0.000000	-2.022721
30	3.293333	-0.026263	4.772797	-1.021165	-1.021165	0.000000	-2.390486
31	3.406667	-0.025771	4.906243	-1.333767	-1.333767	0.000000	-2.758237
32	3.520000	-0.025280	5.077479	-1.688049	-1.688049	0.000000	-3.126027
33	3.633333	-0.024790	5.291230	-2.084011	-2.084011	0.000000	-3.493793
34	3.746667	-0.024300	5.552217	-2.521653	-2.521653	0.000000	-3.861524
35	3.860000	-0.023811	5.855166	-3.000976	-3.000976	0.000000	-4.229333
36	3.973333	-0.023322	6.234800	-3.521979	-3.521979	0.000000	-4.597099
37	4.086667	-0.022834	6.655843	-4.084662	-4.084662	0.000000	-4.964821
38	4.200000	-0.022347	7.163019	-4.689025	-4.689025	0.000000	-5.332630
39	4.305882	-0.021863	7.691127	-5.286354	-5.286354	0.000000	-5.641459
40	4.411765	-0.021439	8.293883	-5.910141	-5.910141	0.000000	-5.891286
41	4.517647	-0.020987	8.944087	-6.560387	-6.560387	0.000000	-6.141233
42	4.623529	-0.020535	9.674542	-7.237090	-7.237090	0.000000	-6.391105
43	4.729412	-0.020084	10.478048	-7.940252	-7.940252	0.000000	-6.640934

Cortina_nascente_abrigo.spw

44	4.835294	-0.019634	11.357408	-8.669871	-8.669871	0.000000	-8.890869
45	4.941176	-0.019186	12.315422	-9.425949	-9.425949	0.000000	-7.140760
46	5.047059	-0.018739	13.354892	-10.208485	-10.208485	0.000000	-7.390573
47	5.152941	-0.018293	14.478619	-11.017479	-11.017479	0.000000	-7.640524
48	5.258824	-0.017848	15.689406	-11.852932	-11.852932	0.000000	-7.890341
49	5.364706	-0.017406	16.990053	-12.714842	-12.714842	0.000000	-8.140288
50	5.470588	-0.016965	18.383361	-13.603210	-13.603210	0.000000	-8.390170
51	5.576471	-0.016525	19.872133	-14.518037	-14.518037	0.000000	-8.639980
52	5.682353	-0.016088	21.459170	-15.459322	-15.459322	0.000000	-8.889944
53	5.788235	-0.015653	23.147273	-16.427065	-16.427065	0.000000	-9.139825
54	5.894118	-0.015221	24.939243	-17.421266	-17.421266	0.000000	-9.389619
55	6.000000	-0.014791	26.837883	-18.441925	-18.441925	0.000000	-9.639589
56	6.111111	-0.014342	28.938774	-19.374124	-19.374124	0.000000	-8.389799
57	6.222222	-0.013897	31.126841	-20.011085	-20.011085	0.000000	-5.732655
58	6.333333	-0.013456	33.370032	-20.366350	-20.366350	0.000000	-3.197388
59	6.444444	-0.013018	35.637790	-20.453294	-20.453294	0.000000	-0.782497
60	6.555556	-0.012584	37.901035	-20.285105	-20.285105	0.000000	1.513689
61	6.666667	-0.012155	40.132139	-19.874774	-19.874774	0.000000	3.692983
62	6.777778	-0.011730	42.304909	-19.235076	-19.235076	0.000000	5.757288
63	6.888889	-0.011310	44.394555	-18.378555	-18.378555	0.000000	7.708697
64	7.000000	-0.010894	46.377689	-17.317512	-17.317512	0.000000	9.549397
65	7.111111	-0.010484	48.232197	-16.063993	-16.063993	0.000000	11.281682
66	7.222222	-0.010080	49.937407	-14.629771	-14.629771	0.000000	12.908011
67	7.333333	-0.009681	51.473857	-13.026344	-13.026344	0.000000	14.430657
68	7.444444	-0.009287	52.823372	-11.264918	-11.264918	0.000000	15.852850
69	7.555556	-0.008900	53.969001	-9.356407	-9.356407	0.000000	17.178462
70	7.666667	-0.008519	54.894992	-7.311422	-7.311422	0.000000	18.404883
71	7.777778	-0.008144	55.586753	-5.140274	-5.140274	0.000000	19.540352
72	7.888889	-0.007775	56.030821	-2.852967	-2.852967	0.000000	20.585784
73	8.000000	-0.007413	56.214831	-0.459206	-0.459206	0.000000	21.543871
74	8.111111	-0.007057	56.127476	2.031604	2.031604	0.000000	22.417312
75	8.222222	-0.006707	55.758478	4.610349	4.610349	0.000000	23.208728
76	8.333333	-0.006363	55.098559	7.268195	7.268195	0.000000	23.920638
77	8.444444	-0.006026	54.139405	9.996580	9.996580	0.000000	24.555490
78	8.555556	-0.005694	52.873640	12.787194	12.787194	0.000000	25.115325
79	8.666667	-0.005369	51.294798	15.631965	15.631965	0.000000	25.602965
80	8.777778	-0.005049	49.407071	18.347120	18.347120	0.000000	24.436419
81	8.888889	-0.004735	47.232573	20.793850	20.793850	0.000000	22.020592
82	9.000000	-0.004426	44.801789	22.960256	22.960256	0.000000	19.497873
83	9.111111	-0.004123	42.146521	24.834574	24.834574	0.000000	16.868879
84	9.222222	-0.003824	39.299872	26.405102	26.405102	0.000000	14.134766
85	9.333333	-0.003529	36.296248	27.660133	27.660133	0.000000	11.295290
86	9.444444	-0.003239	33.171358	28.587888	28.587888	0.000000	8.349803
87	9.555556	-0.002952	29.962228	29.176450	29.176450	0.000000	5.297016
88	9.666667	-0.002668	26.707219	29.413703	29.413703	0.000000	2.135279
89	9.777778	-0.002388	23.446053	29.287282	29.287282	0.000000	-1.137790
90	9.888889	-0.002110	20.219842	28.784517	28.784517	0.000000	-4.524890
91	10.000000	-0.001835	17.071125	27.892397	27.892397	0.000000	-8.029088
92	10.111111	-0.001561	14.043906	26.597533	26.597533	0.000000	-11.653788
93	10.222222	-0.001289	11.183703	24.886135	24.886135	0.000000	-15.402597
94	10.333333	-0.001019	8.537584	22.743994	22.743994	0.000000	-19.279288
95	10.444444	-0.000749	6.154224	20.156488	20.156488	0.000000	-23.287577
96	10.555556	-0.000480	4.083942	17.108586	17.108586	0.000000	-27.430899
97	10.666667	-0.000211	2.378750	13.584873	13.584873	0.000000	-31.713449
98	10.777778	0.000057	1.092391	9.569596	9.569596	0.000000	-36.137529
99	10.888889	0.000325	0.280373	5.046719	5.046719	0.000000	-40.705934
100	11.000000	0.000593	0.000000	0.000000	0.000000	0.000000	-45.420516

Cortina_nascente_abrigo.spw

Results after Step 1 :



Culatra

General Data

Licensed User :
 File Name : cortina_sul.spw
 Problem Name : Culatra
 Length (m) : 14.000
 Number of Elements : 100
 Number of Layers : 5
 Number of Loading Steps : 1
 Profile from Catalogue : 9

Data of Layers

Step 0, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
2	0.500	1.500	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
3	1.500	4.200	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
4	4.200	6.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
5	6.000	14.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020

Step 0, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.000	0.020
2	0.500	1.500	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
3	1.500	4.200	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
4	4.200	6.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
5	6.000	14.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020

Step 1, Left side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
2	0.500	1.500	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
3	1.500	4.200	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
4	4.200	6.000	0.000	10.000	4.200	0.000	0.000	0.000	1.000	1.000	1.000	1.000
5	6.000	14.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020

Step 1, Right side

Layer	Top (m)	Bottom (m)	Wd (kN/m ²)	Ws (kN/m ²)	Zw (m)	Cap (m)	q (kN/m ²)	c (kN/m ²)	Ka (-)	Kp (-)	Kn (-)	Dw (m)
1	0.000	0.500	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
2	0.500	1.500	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
3	1.500	4.200	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
4	4.200	6.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020
5	6.000	14.000	11.000	18.000	4.200	0.000	5.000	0.000	0.295	3.394	1.131	0.020

Data of Anchors and Lateral Forces

Step 0 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	10.000	0.000	1.000
1	0.000	0.000	1.000
2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000
5	0.000	0.000	1.000

Step 1 :

Point	Fx (kN/m)	Fa (kN/m)	Fw (m)
0	10.000	0.000	1.000
1	0.000	0.000	1.000

Culatra

2	0.000	0.000	1.000
3	0.000	0.000	1.000
4	0.000	0.000	1.000
5	0.000	0.000	1.000

Data of Axial Forces and Moment

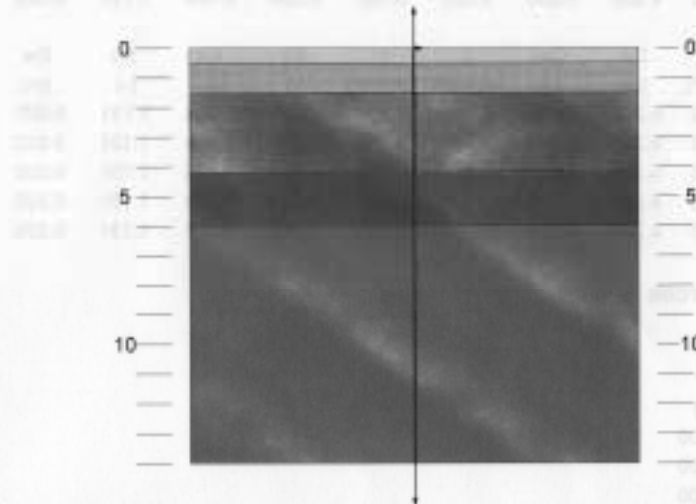
Step	NA (kN/m)	NB (kN/m)	MA (kNm/m)
0	47.500	47.500	13.750
1	47.500	47.500	13.750

Catalogue of Profiles

No	Profile Name	Area (m ² /m)	Weight (kN/m ³)	E (GN/m ²)	h (m)	i (m)	EI (kNm ² /m)
1	AU 20 Arcelor	0.015970	78.000	210.000	0.443000	0.163516	89689.5
2	HZ 775 D 10/13 Profi	0.033300	78.000	210.000	0.787000	0.270857	512274.0
3	HZ 975 D 10/13 Profi	0.036200	78.000	210.000	0.975000	0.334643	851319.0
4	HZ 975 D 22/13 Profi	0.048300	78.000	210.000	0.987000	0.373518	1415106.0
5	HZ 975 A 22/13 Profi	0.040000	78.000	210.000	0.975000	0.359218	1083915.0
6	Larssen VI	0.037400	78.000	210.000	0.440000	0.156619	192654.0
7	AZ 46	0.029100	78.000	210.000	0.481000	0.194821	231945.0
8	AZ48	0.030700	78.000	210.000	0.482000	0.194107	242907.0
9	AZ 50	0.032200	78.000	210.000	0.483000	0.193898	254226.0
10	Larssen 20	0.010100	78.000	210.000	0.220000	0.080800	13847.2
11	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
12	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
13	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
14	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
15	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
16	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
17	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
18	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
19	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4
20	Hoesch 215	0.027400	78.000	210.000	0.340000	0.140000	112778.4

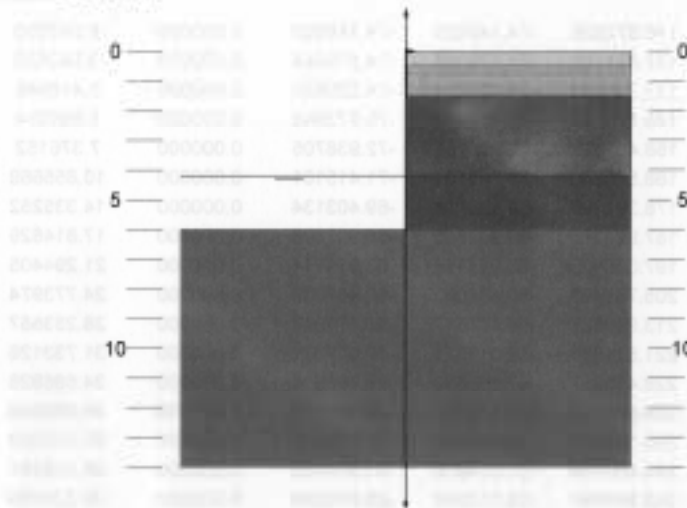
Cross Sections

Step 0 :



Culatra

Step 1 :



Results after Step 1 :

i	z (m)	w (m)	M (kNm)	Q- (kN)	Q+ (kN)	F (kN)	f (kN/m ²)
0	0.000000	-0.060727	-13.750000	0.000000	10.000000	10.000000	0.000000
1	0.125000	-0.059978	-15.022479	9.790273	9.790273	0.000000	-1.677816
2	0.250000	-0.059228	-16.265617	9.529844	9.529844	0.000000	-2.083432
3	0.375000	-0.058477	-17.473080	9.218711	9.218711	0.000000	-2.489064
4	0.500000	-0.057724	-18.638533	8.856875	8.856875	0.000000	-2.894688
5	0.642857	-0.056863	-19.895678	8.170548	8.170548	0.000000	-4.804294
6	0.785714	-0.056001	-21.050121	7.417997	7.417997	0.000000	-5.267862
7	0.928571	-0.055136	-22.092407	6.599222	6.599222	0.000000	-5.731431
8	1.071429	-0.054270	-23.013079	5.714222	5.714222	0.000000	-6.194963
9	1.214286	-0.053402	-23.802680	4.762997	4.762997	0.000000	-6.658582
10	1.357143	-0.052532	-24.451752	3.745548	3.745548	0.000000	-7.122150
11	1.500000	-0.051661	-24.950837	2.681875	2.681875	0.000000	-7.585719
12	1.642105	-0.050791	-25.274237	1.308597	1.308597	0.000000	-8.523085
13	1.784211	-0.049920	-25.400788	-0.110210	-0.110210	0.000000	-9.984146
14	1.926316	-0.049047	-25.321120	-1.594546	-1.594546	0.000000	-10.445347
15	2.068421	-0.048172	-25.025978	-3.144411	-3.144411	0.000000	-10.906478
16	2.210526	-0.047294	-24.506031	-4.759806	-4.759806	0.000000	-11.367615
17	2.352632	-0.046415	-23.751964	-6.440730	-6.440730	0.000000	-11.828663
18	2.494737	-0.045534	-22.754462	-8.187183	-8.187183	0.000000	-12.289877
19	2.636842	-0.044651	-21.504210	-9.999165	-9.999165	0.000000	-12.751008
20	2.778947	-0.043767	-19.991890	-11.876677	-11.876677	0.000000	-13.212146
21	2.921053	-0.042881	-18.208185	-13.819718	-13.819718	0.000000	-13.673181
22	3.063158	-0.041993	-16.143776	-15.828288	-15.828288	0.000000	-14.134408
23	3.205263	-0.041104	-13.789343	-17.902387	-17.902387	0.000000	-14.595539
24	3.347368	-0.040214	-11.135566	-20.042016	-20.042016	0.000000	-15.056676
25	3.489474	-0.039324	-8.173122	-22.247173	-22.247173	0.000000	-15.517891
26	3.631579	-0.038432	-4.892688	-24.517860	-24.517860	0.000000	-15.978938
27	3.773684	-0.037540	-1.284939	-26.854076	-26.854076	0.000000	-16.440069
28	3.915789	-0.036648	2.659449	-29.255822	-29.255822	0.000000	-16.901207
29	4.057895	-0.035757	6.949805	-31.723096	-31.723096	0.000000	-17.362208
30	4.200000	-0.034865	11.595456	-34.255900	-34.255900	0.000000	-17.823469
31	4.338462	-0.033998	16.486145	-36.982538	-36.982538	0.000000	-19.692320
32	4.476923	-0.033132	21.757560	-39.754421	-39.754421	0.000000	-20.019233
33	4.615385	-0.032267	27.415985	-42.571549	-42.571549	0.000000	-20.345857
34	4.753846	-0.031405	33.467705	-45.433921	-45.433921	0.000000	-20.672767
35	4.892308	-0.030545	39.919006	-48.341539	-48.341539	0.000000	-20.999393
36	5.030769	-0.029688	46.776176	-51.294402	-51.294402	0.000000	-21.326316
37	5.169231	-0.028835	54.045504	-54.292509	-54.292509	0.000000	-21.652923
38	5.307692	-0.027985	61.733281	-57.335862	-57.335862	0.000000	-21.979857
39	5.446154	-0.027141	69.845799	-60.424460	-60.424460	0.000000	-22.306467
40	5.584615	-0.026301	78.389352	-63.558302	-63.558302	0.000000	-22.633391
41	5.723077	-0.025468	87.370235	-66.737390	-66.737390	0.000000	-22.960003
42	5.861538	-0.024641	96.794746	-69.961722	-69.961722	0.000000	-23.286933
43	6.000000	-0.023822	106.669181	-73.231300	-73.231300	0.000000	-23.613540

Culatra

Results after Step 1 :

