Havmyndil fyri bæði ytru og innaru leiðirnar

J. í Hjøllum & K. Simonsen, Depilin fyri havmyndlan, Fróðskaparsetur Føroya

Vísindavøkan, 22.09.2023

UNIVERSITY OF
THE FAROE ISLANDS

Næstu løtuna

Havmyndlan og framd sjóvarfalsmyndlan

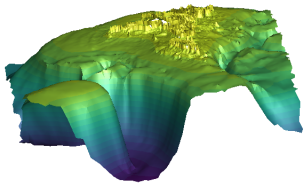
Nýggi havmyndilin fyri Føroyaleiðirnar

Feskvatnsfloymurin við áunum

Dømir við Landgrunnamyndlinum

Samanumtøka

Numerisk havmyndlan

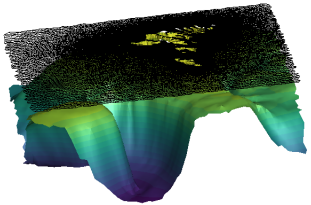


Kenna botnlendi, -jú neyvari, jú betur.

Numerisk havmyndlan

Kenna botnlendi, -jú neyvari, jú betur.

Leggja eitt rokninet omaná

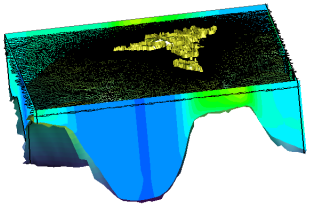


Numerisk havmyndlan

Kenna botnlendi, -jú neyvari, jú betur.

Leggja eitt rokninet omaná

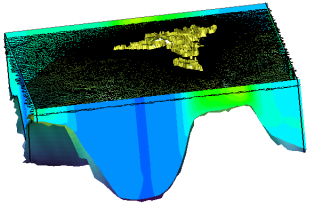
Áseta treytirnar á opnu rondunum og á yvirflatuna fyri alt roknitíðarskeiðið ($\sim$ dagar, mánaðar til ár).



Numerisk havmyndlan

Kenna botnlendi, -jú neyvari, jú betur.

Leggja eitt rokninet omaná



Áseta treytirnar á opnu rondunum og á yvirflatuna fyri alt roknitíðarskeiðið ($\sim$ dagar, mánaðar til ár).

og síðani í hvørjum einstøkum meska loysa støddfrøðiligar líkningar fyri broytingar í

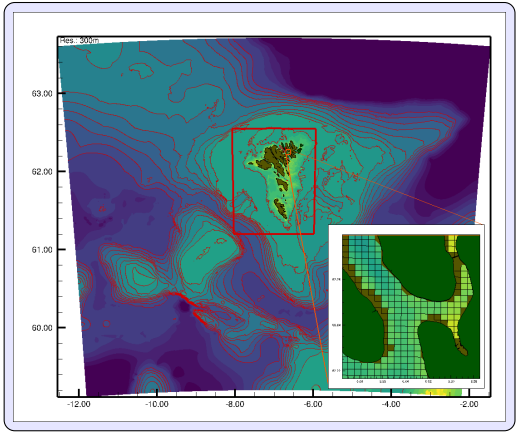
- vatnstøðu
- streymferð í NS og EV rætning

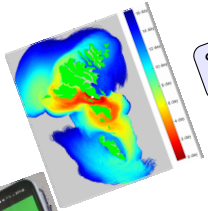
og um tað er við, so eisini fyri

- saltinnihald og hita, og harvið eisini evnisvekt

fyri hvørt tíðarlop ($\sim$ 0.2-10 sek.).

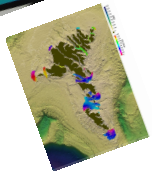
Dømi um framda myndlan av sjóvarfallinum





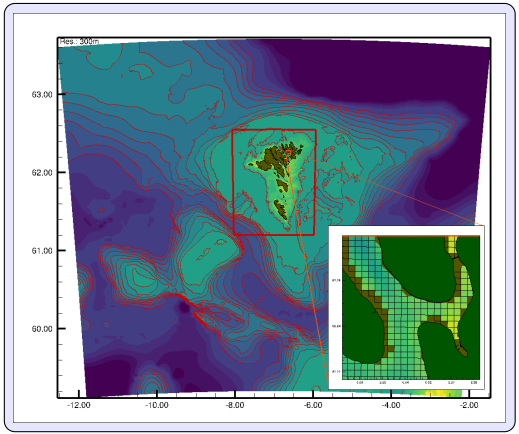
Spjaðing av lús frá alibrúkum

RÁK Appin (~2500 brúkara)

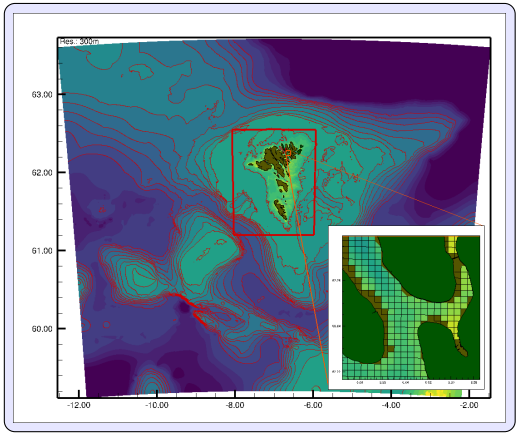


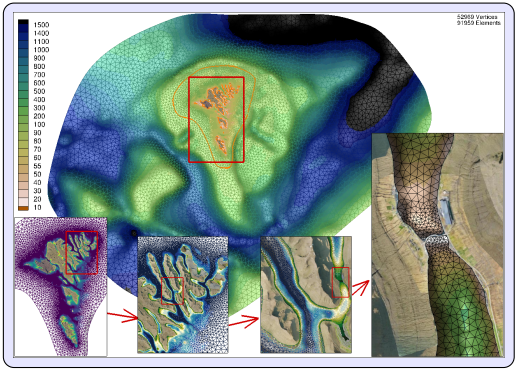
Kortleggjan av orkuni í sjóvarfalsrákinum

Reguligt <> ikki-reguligt rokninet fyri Føroyaleiðirnar

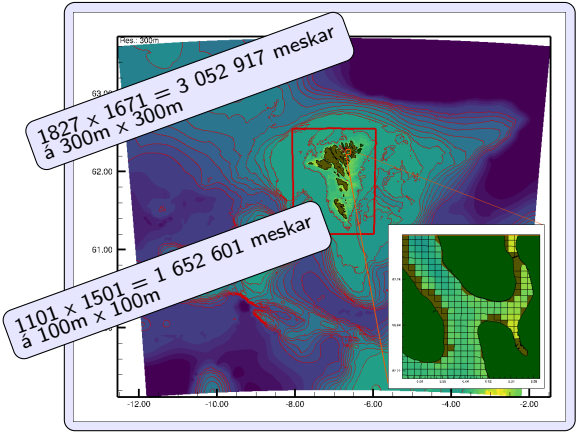


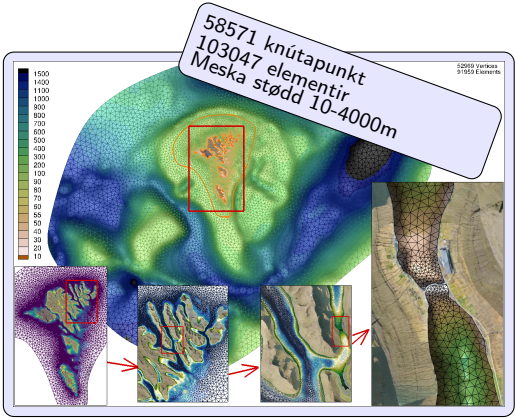
Reguligt <> ikki-reguligt rokninet fyri Føroyaleiðirnar



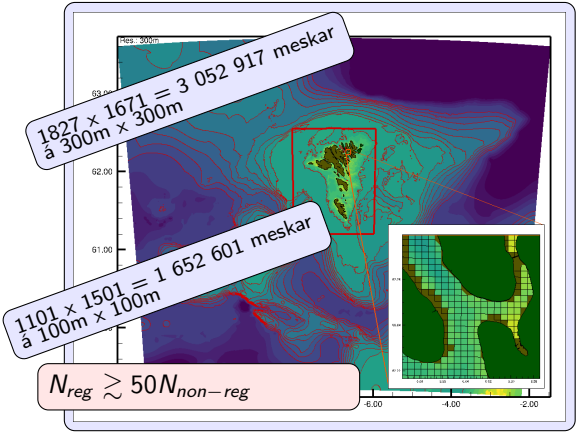


Reguligt <> ikki-reguligt rokninet fyri Føroyaleiðirnar

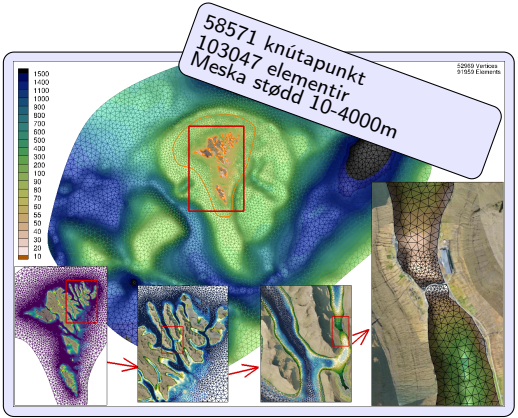




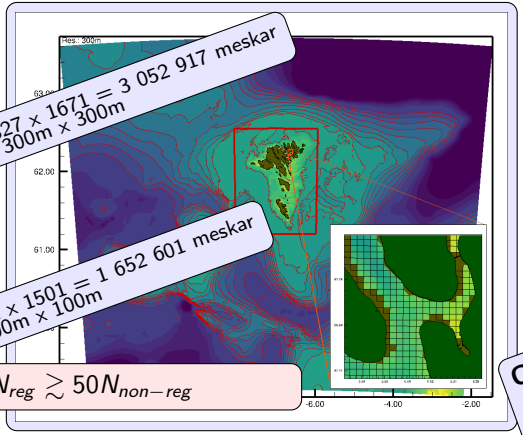
Reguligt <> ikki-reguligt rokninet fyri Føroyaleiðirnar



$N_{reg} \gtrsim 50 N_{non-reg}$



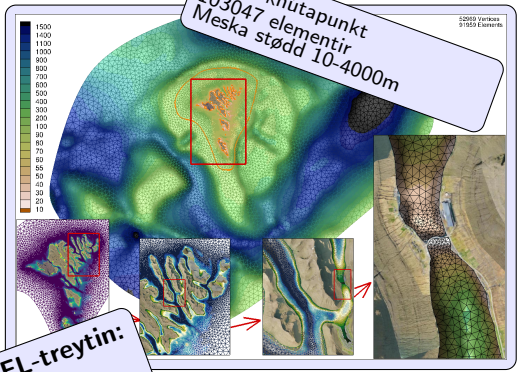
Reguligt <> ikki-reguligt rokninet fyri Føroyaleiðirnar



1827 x 1671 = 3 052 917 meskar
á 300m x 300m

1101 x 1501 = 1 652 601 meskar
á 100m x 100m

$N_{reg} \gtrsim 50 N_{non-reg}$

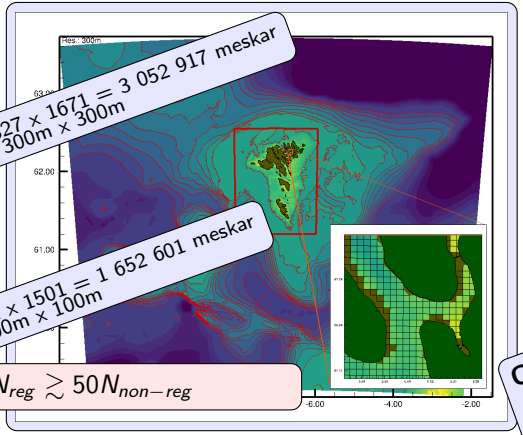


58571 knútapunkt
103047 elementir
Meska støddd 10-4000m

CFL-treytin:

$$\Delta t \leq \frac{\alpha}{\sqrt{g}} \frac{\Delta x}{\sqrt{d}}$$

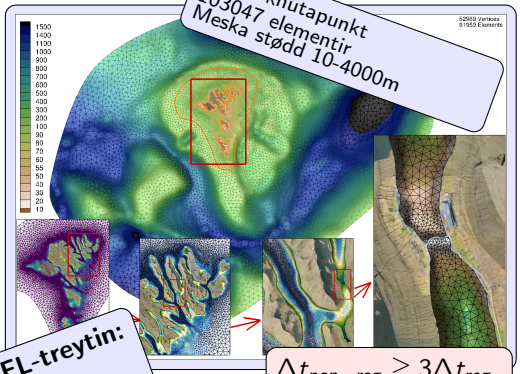
Reguligt <> ikki-reguligt rokninet fyri Føroyaleiðirnar



1827 x 1671 = 3 052 917 meskar
á 300m x 300m

1101 x 1501 = 1 652 601 meskar
á 100m x 100m

$N_{reg} \gtrsim 50 N_{non-reg}$



58571 knútapunkt
103047 elementir
Meska støddd 10-4000m

$\Delta t_{non-reg} \gtrsim 3 \Delta t_{reg}$

CFL-treytin:

$$\Delta t \leq \frac{\alpha}{\sqrt{g}} \frac{\Delta x}{\sqrt{d}}$$

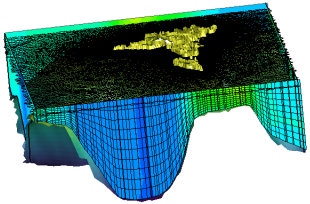
T.v.s áleið 150 ferðir minni roknikrevjandi

Numerisk havmyndlan - bíligari í roknitíð = fleiri møguleikar

Kenna botnlendi, jú neyvari jú betur.

Leggja eitt rokninet omaná.

Áseta treytirnar á opnu rondunum og á yvirflatuna fyri alt roknitíðarskeiðið (∼ dagar, mánaðar til ár)



Fleiri løg niður gjøgnum sjógvin.

Síðan í hvørjum meska rokna

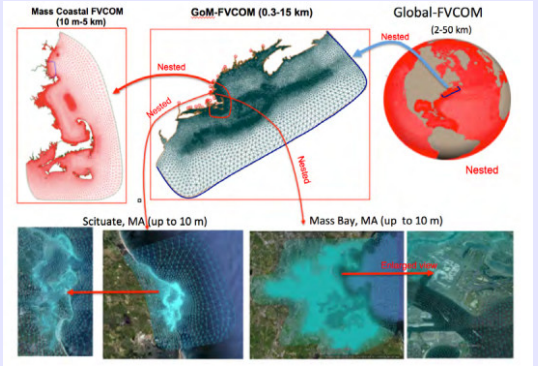
- vatnstøðu
- streymferð í NS og EW rætning

og um tað er við, so eisini fyri

- saltinnihald og hita, og harvið eisini evnisvekt

fyri hvørt tíðarlop (∼ 0.2-10 sek.)

FVCOM-myndilin valdur til Føroyaleiðirnar

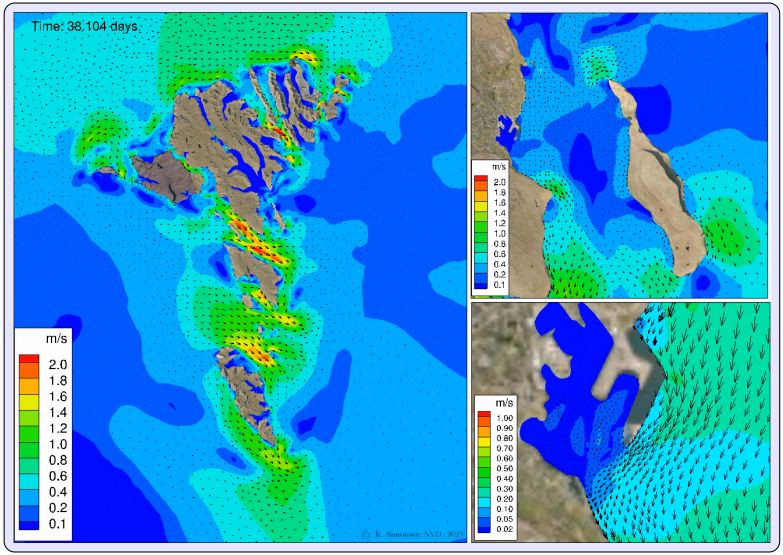


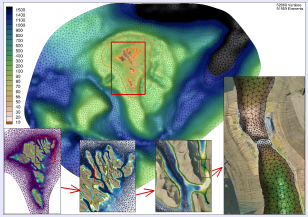
Mynd: IOOS/NECOFS

FVCOM

- Ment av MEDM-Lab, Univ. of Massachusetts-Dartmouth, USA (Chen et al., 2001,2002).
- Í dag alheims og ótal av økismyndlum.
- 100-tals bólkar kring heimin brúka & menna hann.
- Støddfrøðiliga nýggjasta nýggja

Sjóvarfalsrák við nýggja myndlinum

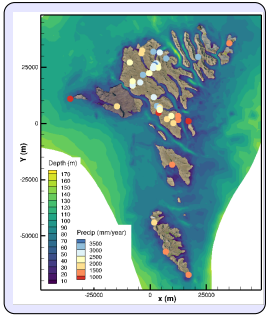


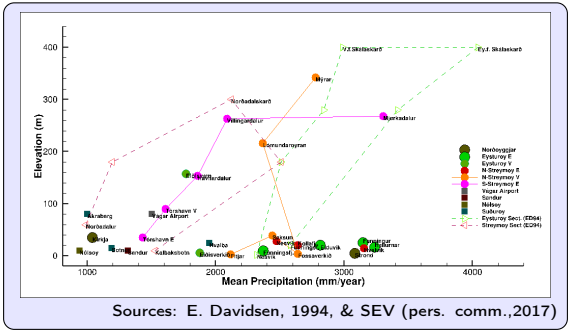


Alt myndlaøkið.
Her er bara ein úrdráttur vístur.

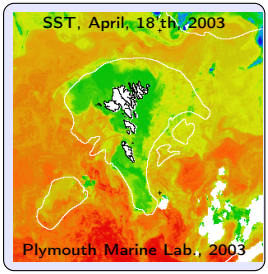
Litirnir vísa streymferð.

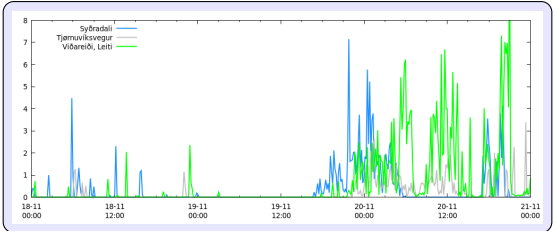
Regn í Føroyum: Hvussu nógv? Ávirkar tað rákið á Landgrunninum?



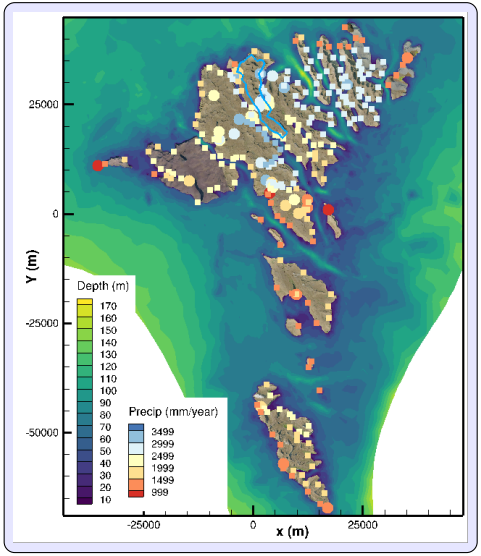


Sources: E. Davidsen, 1994, & SEV (pers. comm.,2017)



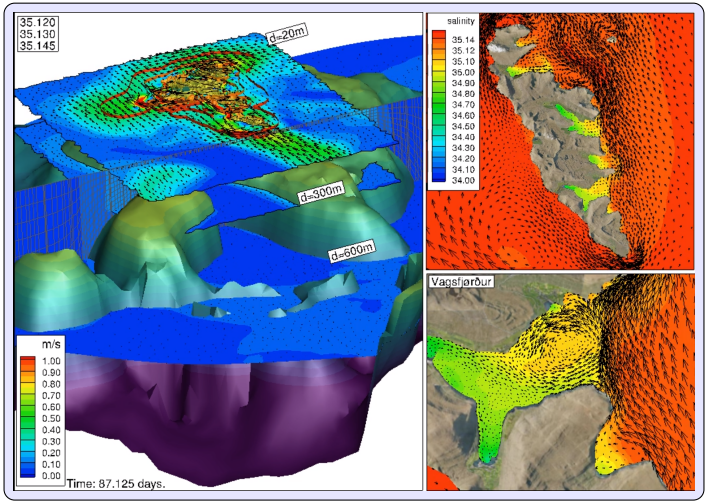


Áarfloymur av landi í myndlinum

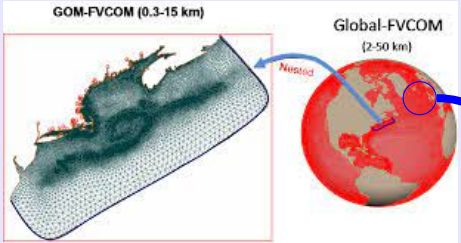


- Stórir rundingar: Støð, har úrslit frá avfalsmátingar eru.
- Bláa linjan: Savningarøkið til vatnorkuverkið hjá SEV við Eiði (Hædd: 160m)
- Fýrakantar:
  - 'Áir' í myndlinum (Tils.: 252)
  - Til hvørja 'á' er eitt avrenningarøki ásett út frá kortal.fo.
  - Til hvørt einstakt avrenningarøki er ásett eitt meðal avfall.

Dømi frá Landgrunna myndlinum



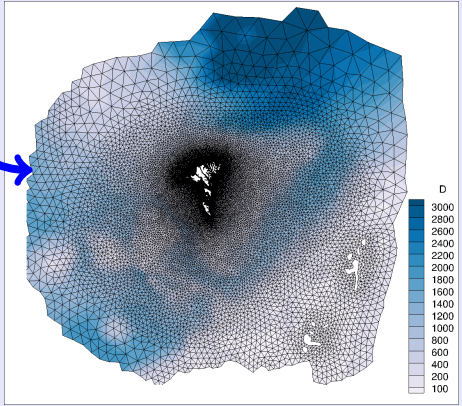
Randtreytir frá alheims FVCOM til Føroya-myndilin



Mynd: Chen et. al, 2016

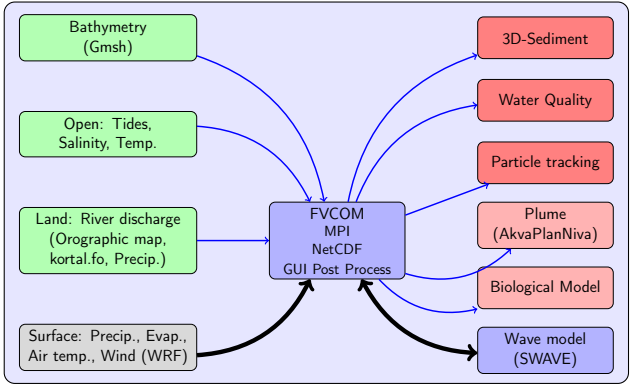
Gevur møguleikar at myndla

- Stóru havstreymarnar, sum eru framvið Føroyum
- Hvussu broytingar í stórhøvunum ávirka okkara leiðir.

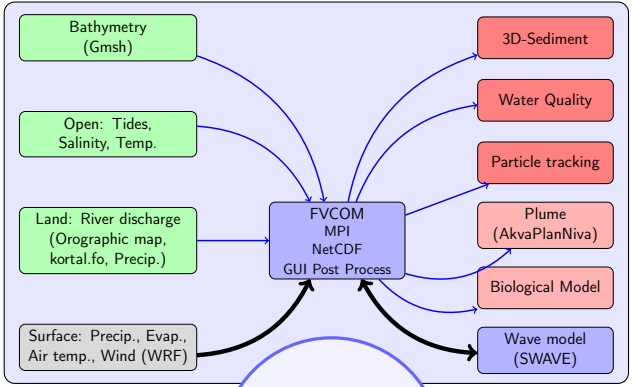


Samstarv við OceanBox.io og MEDM-Lab

FVCOM myndlatyssið er nógv meira enn rák

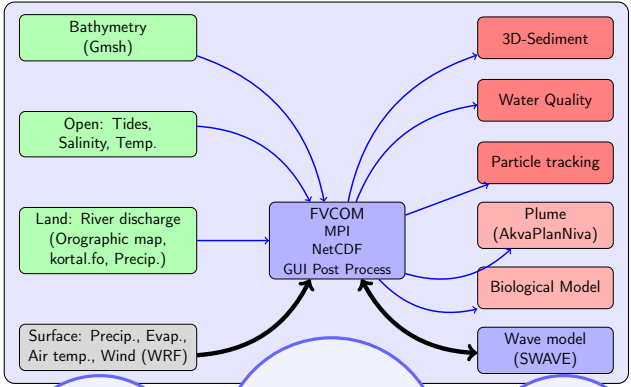


FVCOM myndlatyssið er nógv meira enn rák



The Northeast Coastal Ocean Forecast System (NECOFS) (US) síðani 2008.

FVCOM myndlatyssið er nógv meira enn rák

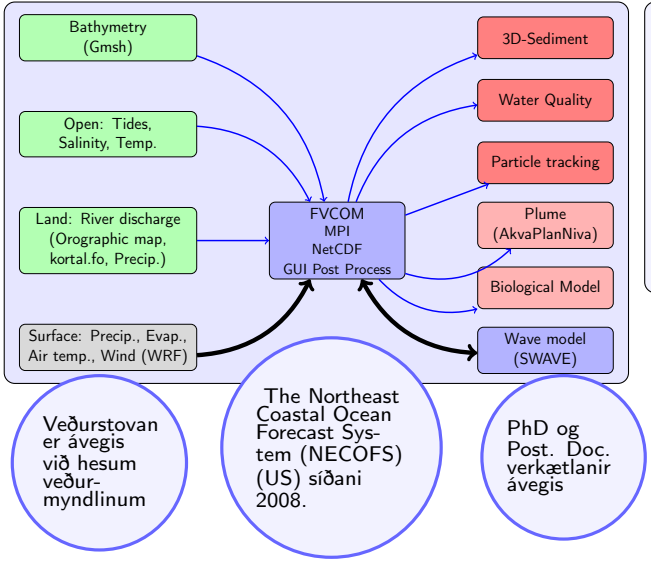


Veðurstovan er ávegis við hesum veður-myndlinum

The Northeast Coastal Ocean Forecast System (NECOFS) (US) síðani 2008.

PhD og Post. Doc. verkætlanir ávegis

FVCOM myndlatyssið er nógv meira enn rák



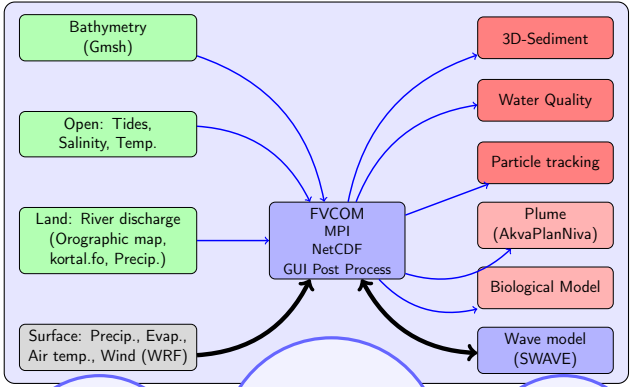
Føroyska forsagnarskipan

- Fyrst: Veður-Aldu-Rák (VARFO)

Síðani víðka við
í tilvildarliga raðfylgju

- - Leitiskipan (SAR)
- - Smittu og lússpjaðing
- - Sjógvgóðsku
- - Havlívfrøði

FVCOM myndlatyssið er nógv meira enn rák



Føroyska forsagnarskipan

- Fyrst: Veður-Aldu-Rák (VARFO)

Síðani víðka við
í tilvildarliga raðfylgju

- - Leitiskipan (SAR)
- - Smittu og lússpjaðing
- - Sjógvgóðsku
- - Havlívfrøði

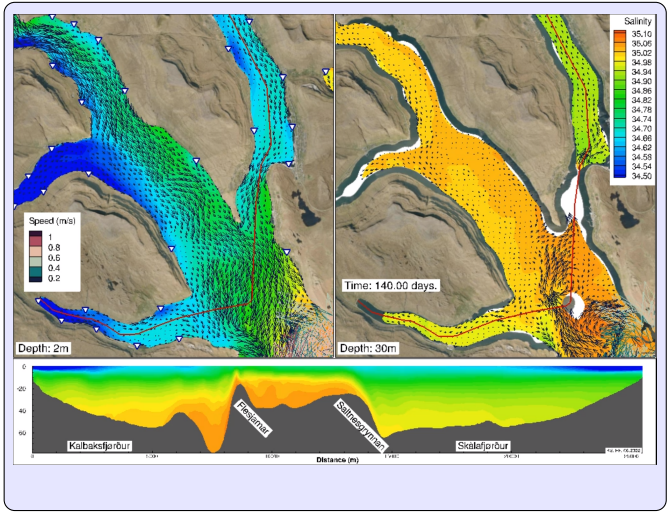
Veðurstovan er ávegis við hesum veður-myndlinum

The Northeast Coastal Ocean Forecast System (NECOFS) (US) síðani 2008.

PhD og Post. Doc. verkætlanir ávegis

Vit eru væl ávegis!! Skipanin kann gerast og verða virkin innan stutta tíð (ár), um viljin er til tað.

Kalbaks- og Skálafjørðurin í Landgrunnamyndlinum



Myndlan við

- meðal sjóvarfall (M_2) á rondini
- meðal floymur frá 252 áum kring landið
- støðugum hita
- ongum vindi
- byrjan frá ongum rákið og S=35.150 allastaðni

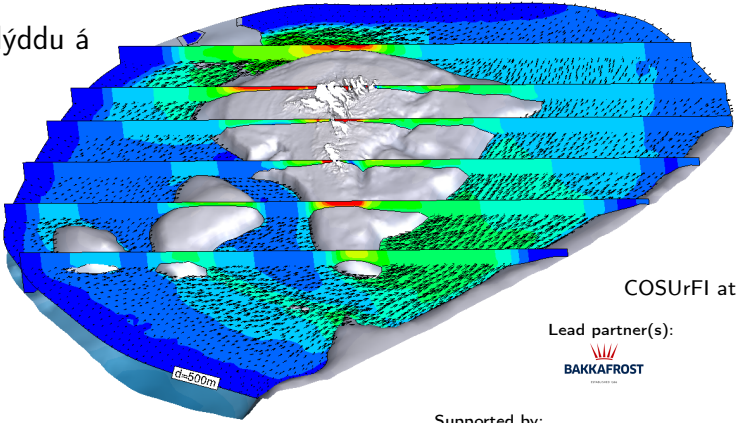
Samanumtøka

- Fjøltáttaði havmyndilin FVCOM er settur upp fyri Føroyaleiðirnar.
- FVCOM gevur nýggjar møguleikar at kanna
  - rákið í havnaløgum, á firðunum, Landgrunninum og havøkini kring okkum í einum.
  - hvussu broytingar uttan av havi, t.d. veðurlagsbroytingar, ávirka okkara firðir.
- FVCOM er partur av størri myndlateyggju, sum kann veita okkum eina fjølltáttaði forsagnarskipan fyri veður aldu og rák (VAR) og seinni eisini havlívfrøðilig viðurskiftir.

Hettar er partur av virkseminum hjá **Depilinum fyri havmyndlan á Setrinum (COSUrFI)** sum skal

- vera eitt sterkt havmyndlaumhvørvi.
- skapa sambond millum havmyndlagranskarar og aðrar áhugabólkar.
- gera amboð at stuðla undir burðardygga menning av Føroyum.

Takk fyri at tit lýddu á



COSUrFI at UNIVERSITY OF THE FAROE ISLANDS

Lead partner(s):

BAKKAFROST

The permission to use

FVCOM

granted by the MEDM research group in SMAST-University of Massachusetts Dartmouth, USA, is very much appreciated.

Supported by:

betri trygging

granskingarráðið
RESEARCH COUNCIL FAROE ISLANDS

Project-partners:

RAO

VØRN

Fiskaaling

UNIVERSITY OF COPENHAGEN

Vísinda vøka