Supplement of Earth Syst. Sci. Data, 16, 2165–2195, 2024
https://doi.org/10.5194/essd-16-2165-2024-supplement
© Author(s) 2024. CC BY 4.0 License.

Open Access Earth System Science Data

Supplement of

Predictive mapping of organic carbon stocks in surficial sediments of the Canadian continental margin

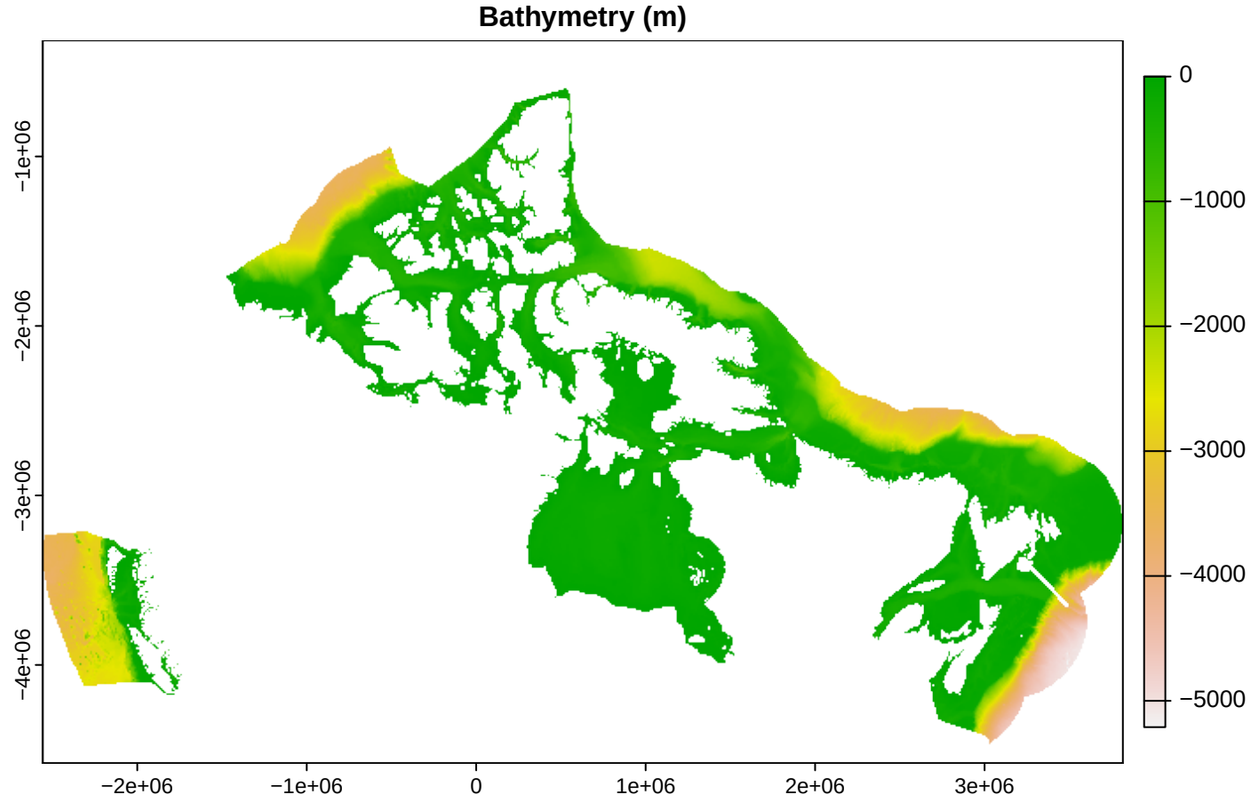
Graham Epstein et al.

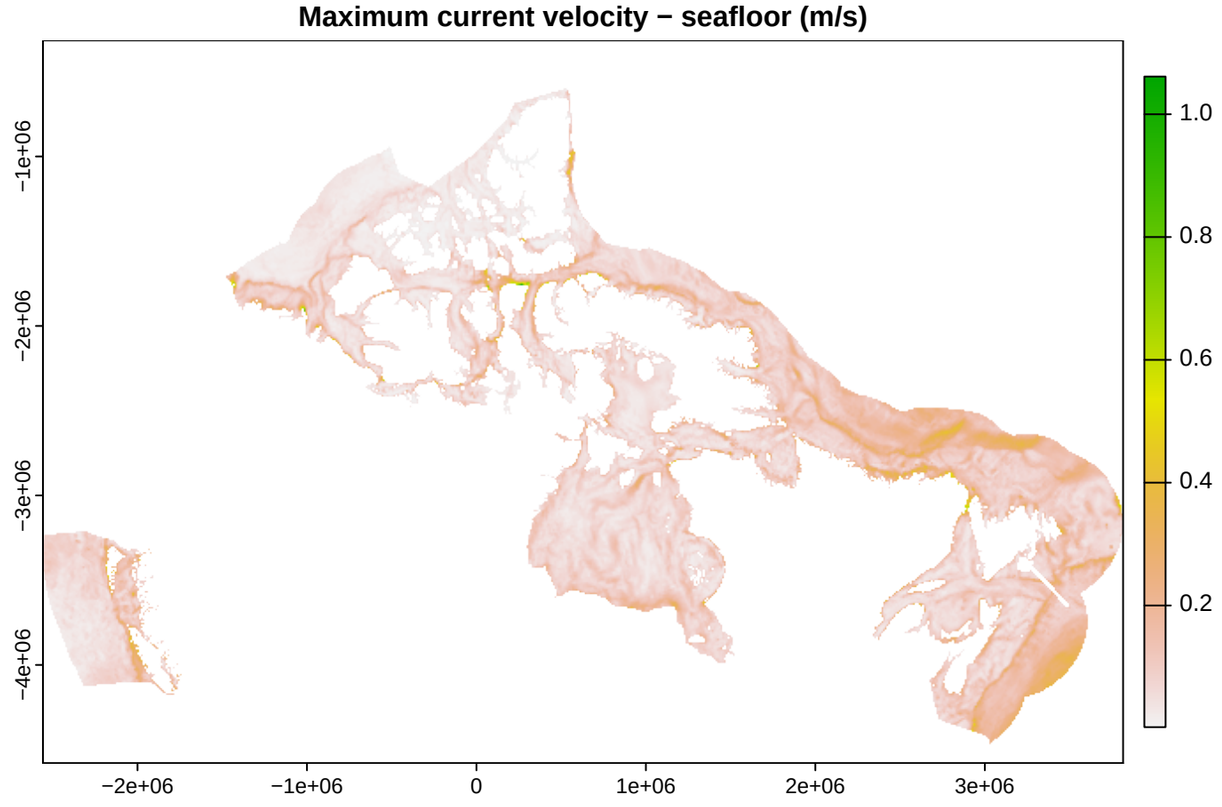
Correspondence to: Graham Epstein (grahamepstein@uvic.ca)

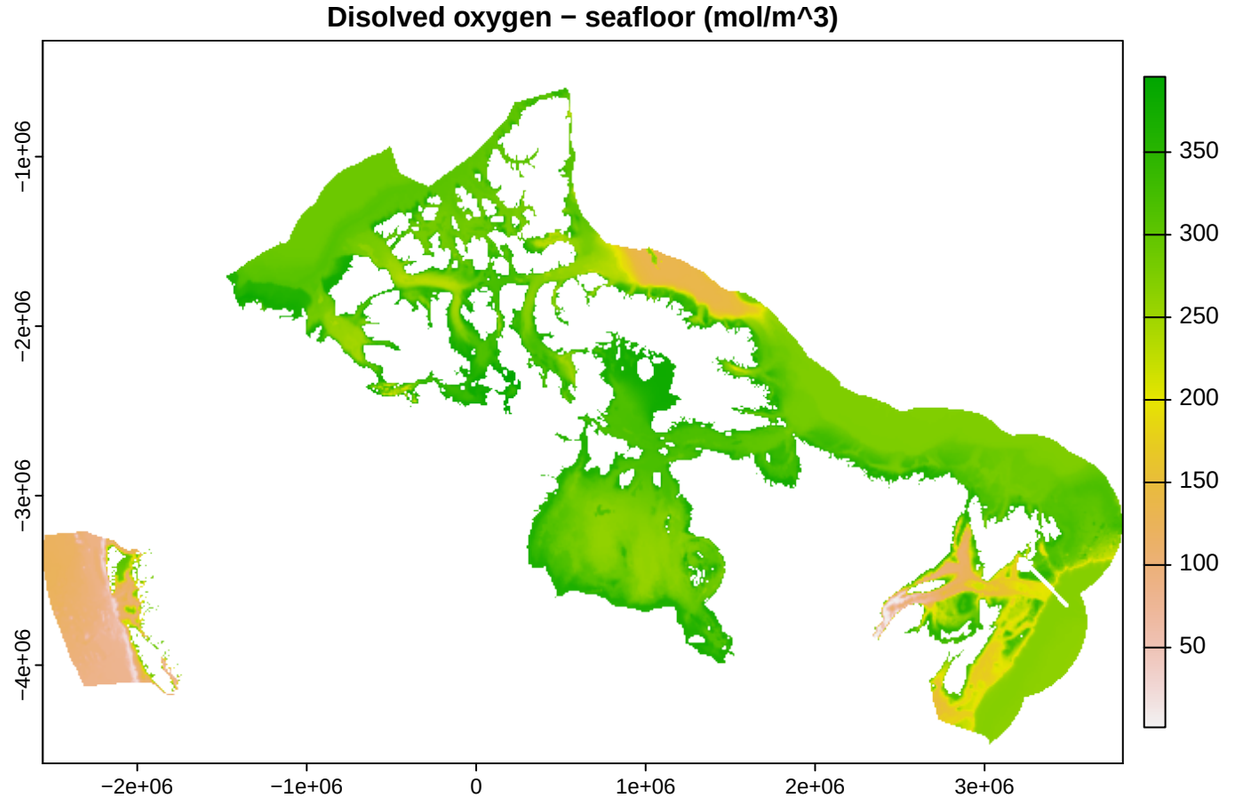
The copyright of individual parts of the supplement might differ from the article licence.

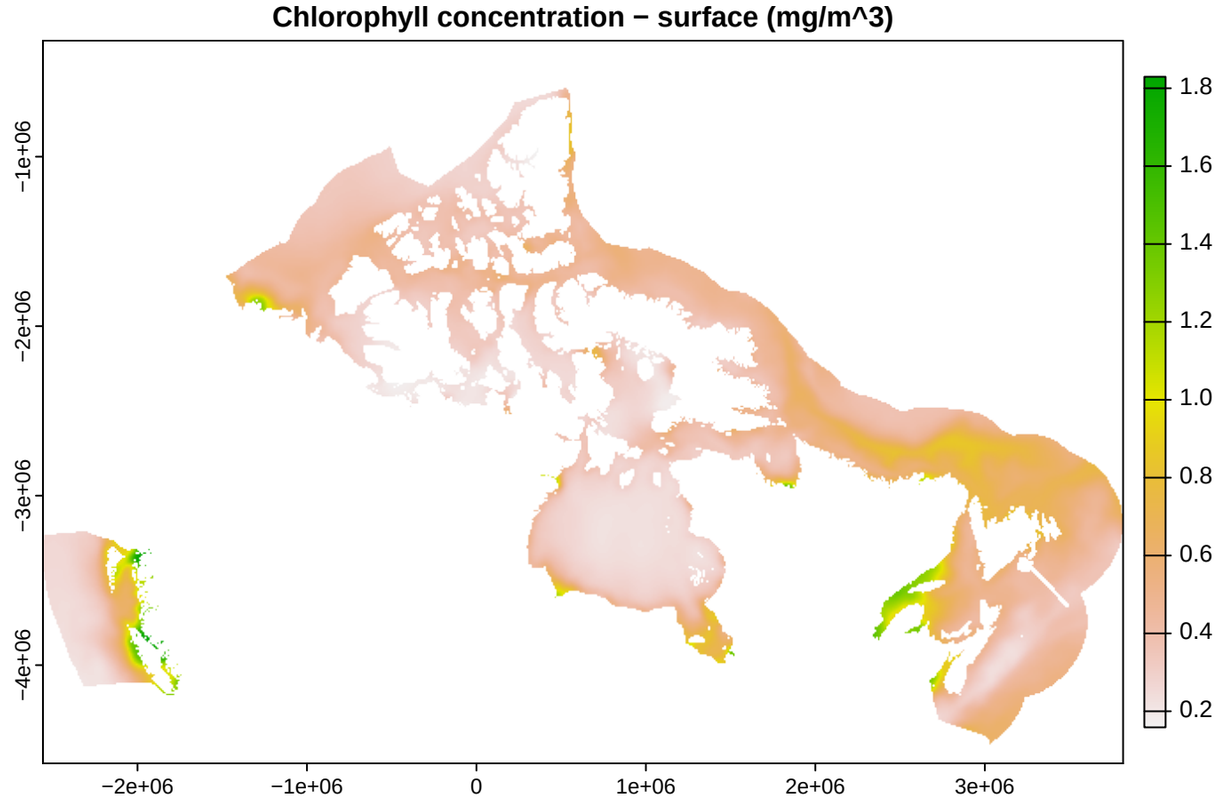
Description

The following plots show the final set of predictor variables available for predictive mapping of seafloor sediments across Canada. All plots are shown with the x-axis indicating the Longitude and y-axis the Latitude within the co-ordinate reference system EPSG:3573 WGS 84 - North Pole Lambert Azimuthal Equal Area Canada. The final resolution of all raster layers is 200 m x 200 m; however, they cannot be visually reproduced at this resolution at their full extent, therefore the display of the data inherently includes some aggregation. Plots are predominantly shown with a continuous colour scale from low values in grey and high values in green. Bioregion is shown as 12 discrete categories (see Table 2 of main text); BPI (benthic position index), VRM (vector ruggedness measure) and curvature measures are shown in quantile groups to better visualise spatial contrasts in the data. For some of the plots shown in a continuous colour scale, the delineation between lower values may not be visually apparent due to highly right skewed data. For further information on the methods and data sources see Table 1 and Sections 2.2 and 2.3 of the main text.

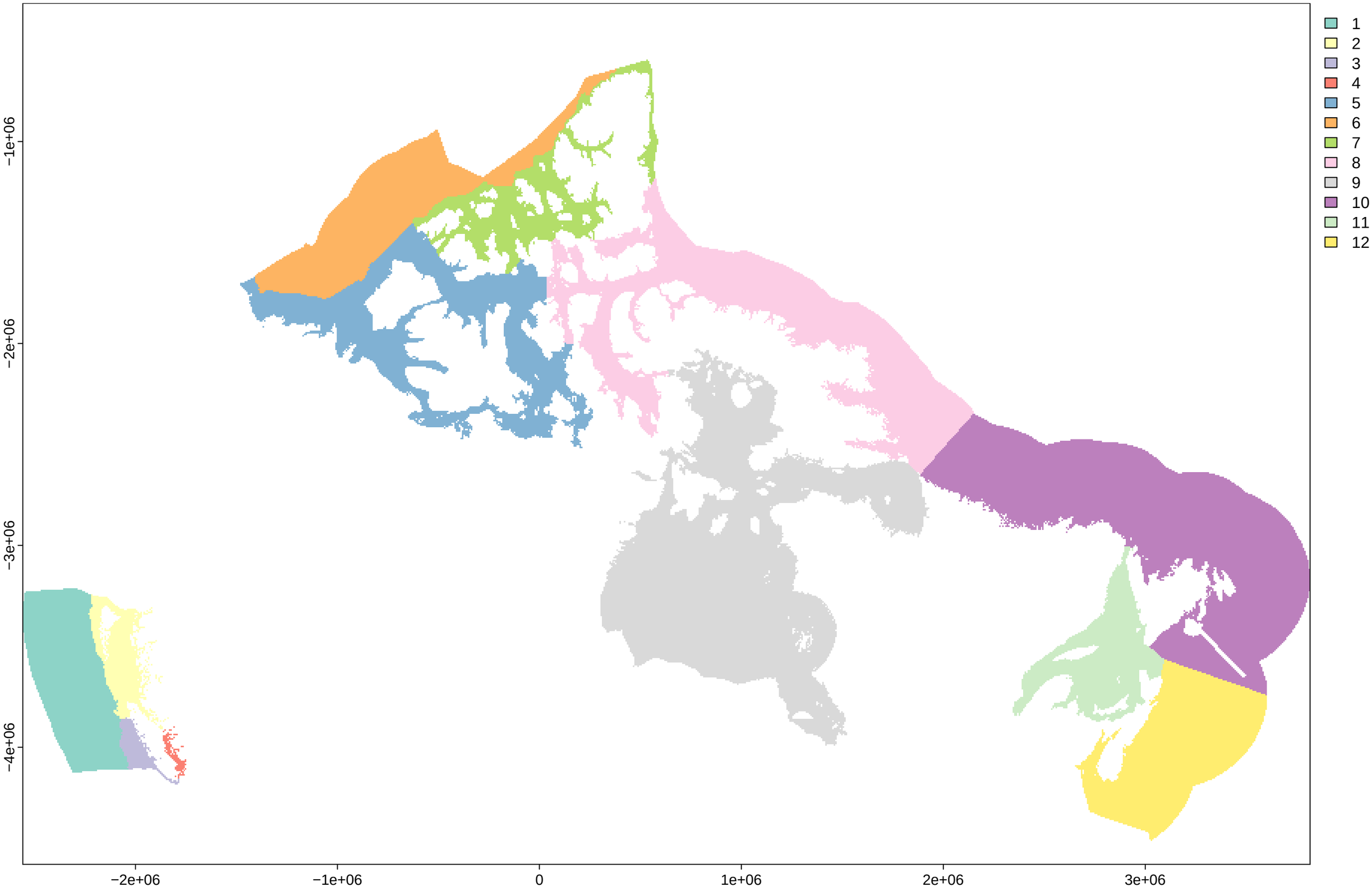

Bathymetry (m)
0
−1000
−2000
−3000
−4000
−5000
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

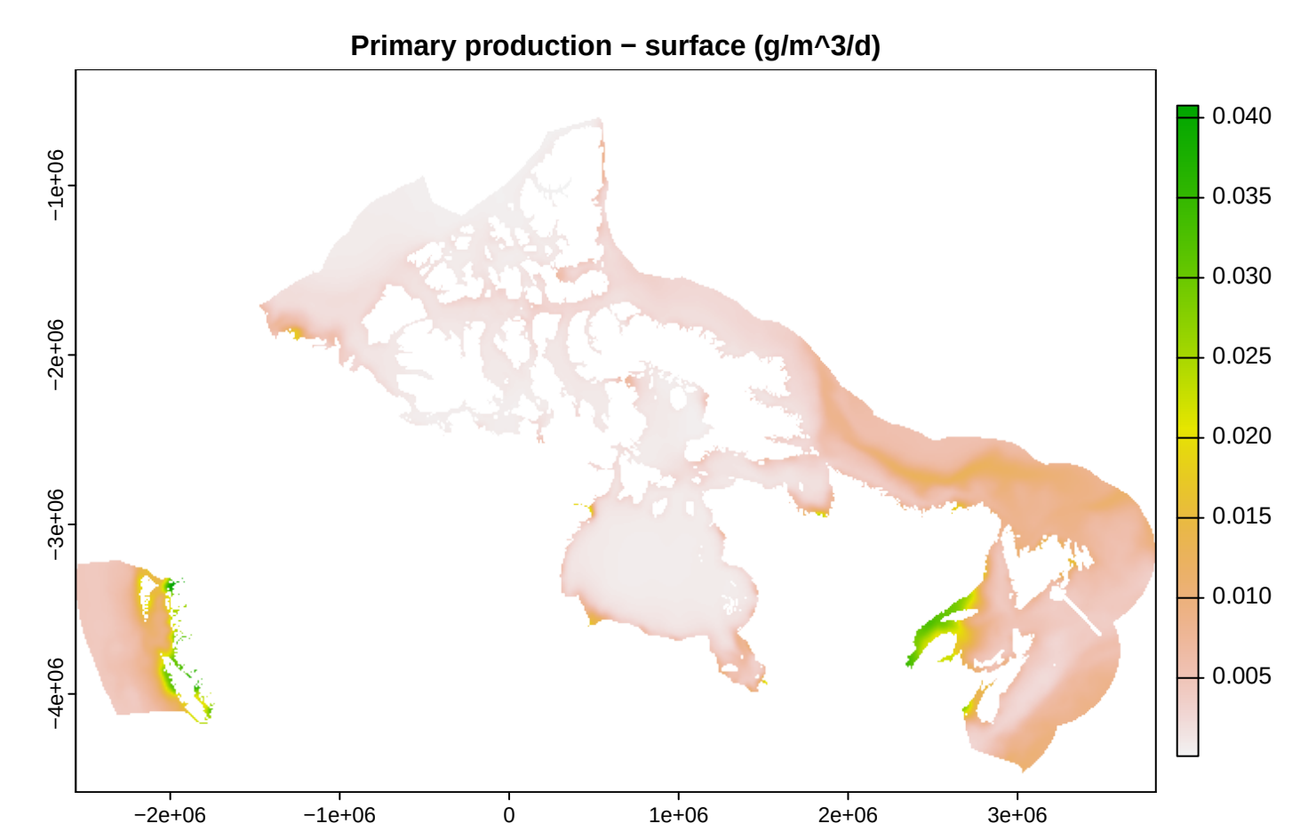

Maximum current velocity − seafloor (m/s)
1.0
0.8
0.6
0.4
0.2
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

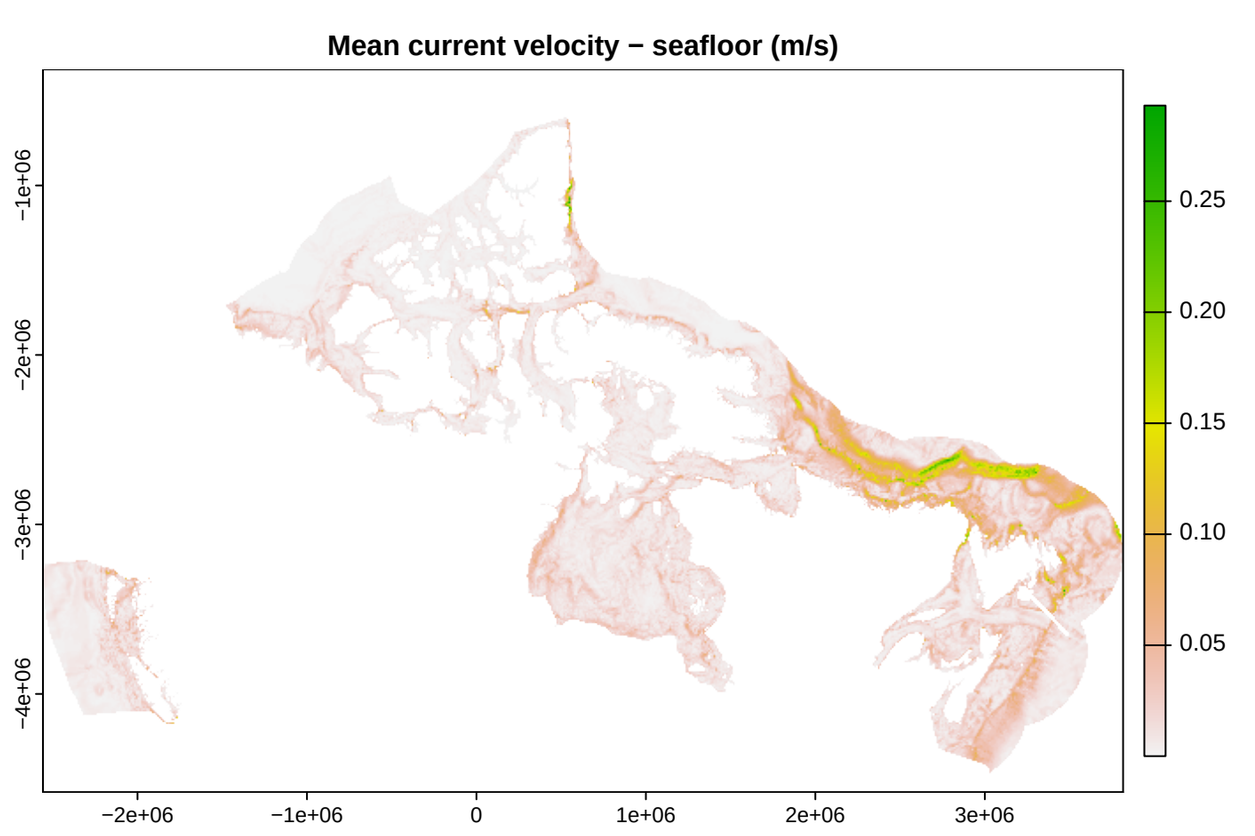

Disolved oxygen − seafloor (mol/m^3)
350
300
250
200
150
100
50
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

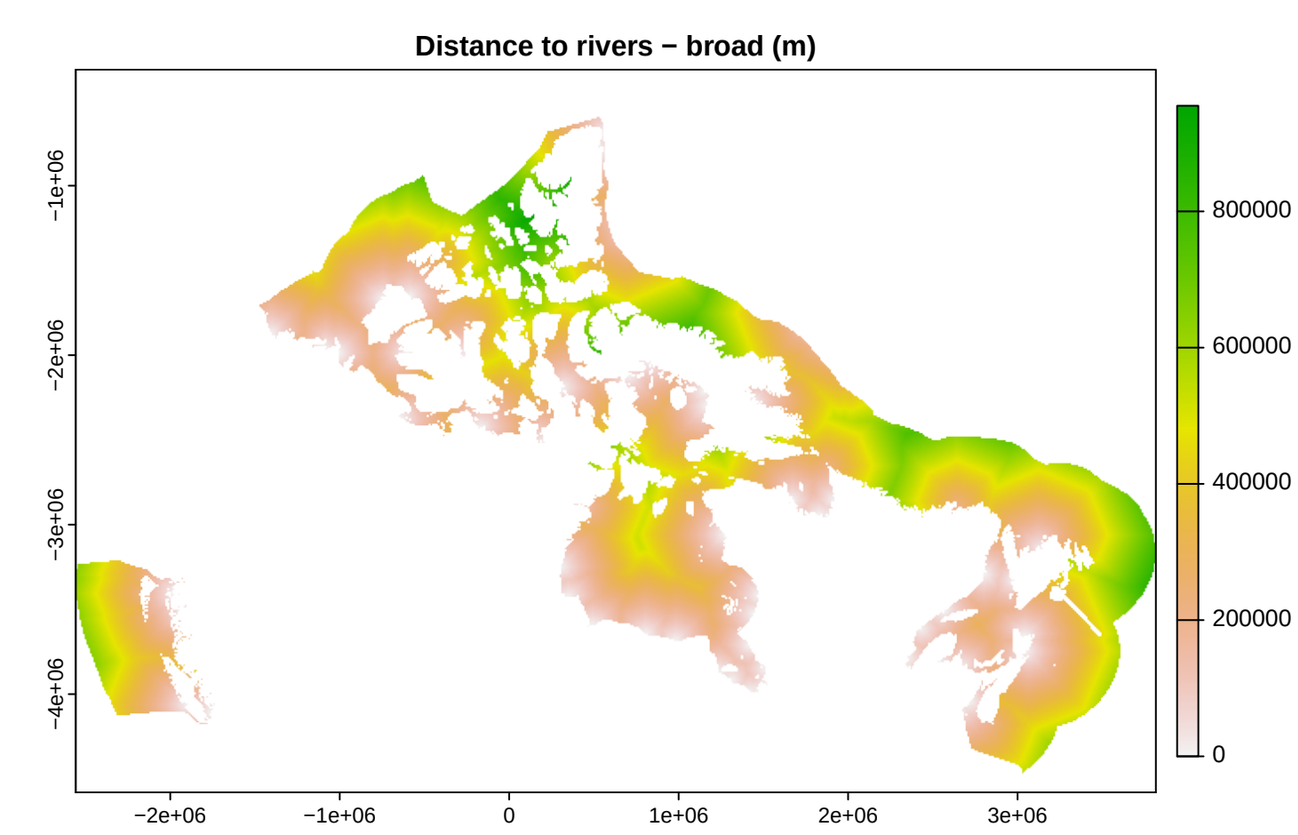

Chlorophyll concentration − surface (mg/m^3)
1.8
1.6
1.4
1.2
1.0
0.8
0.6
0.4
0.2
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

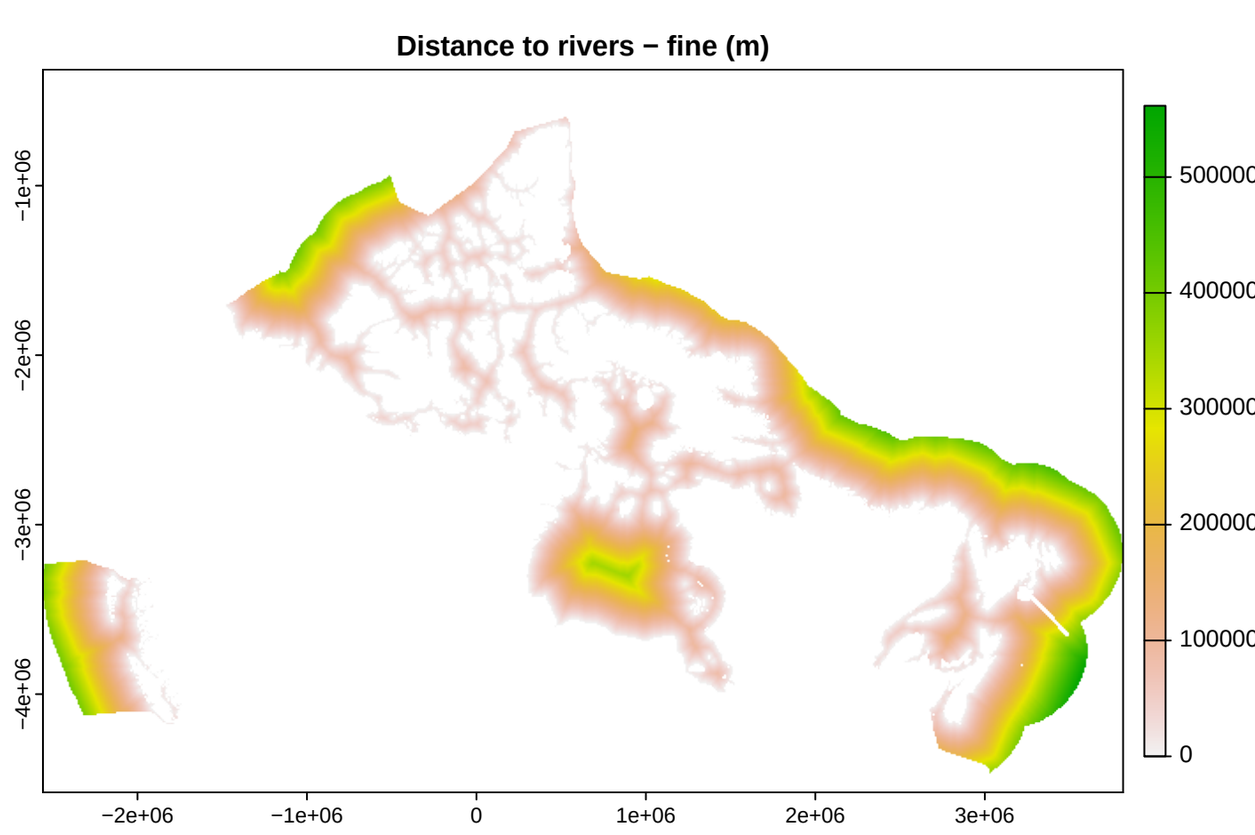
Bioregion

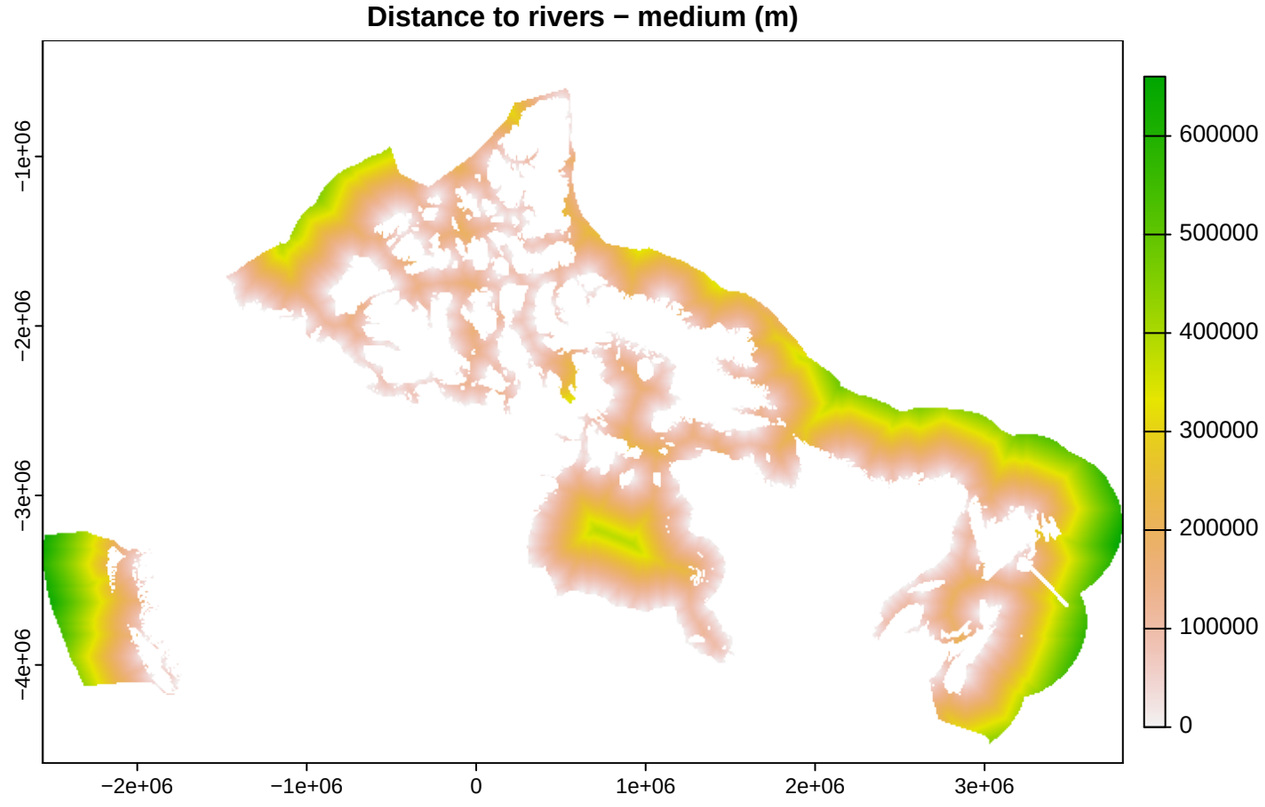

1
2
3
4
5
6
7
8
9
10
11
12
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

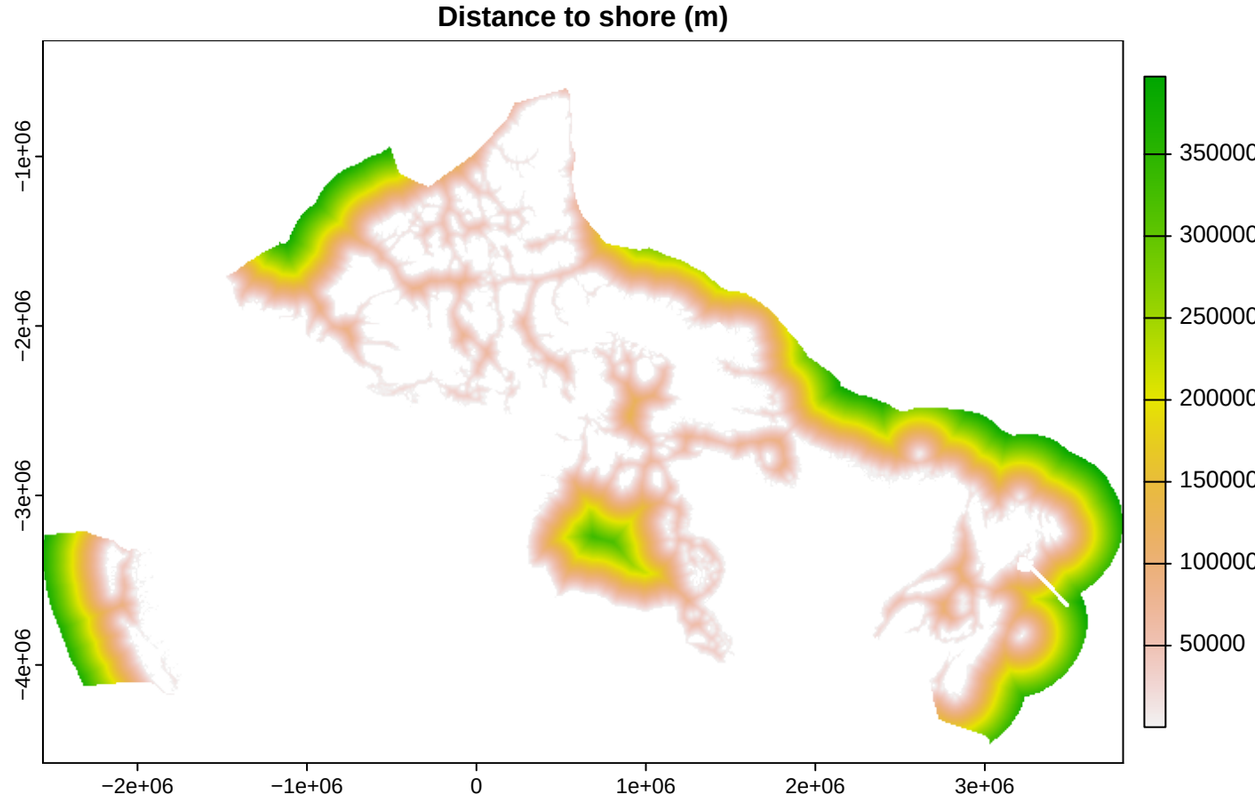

Primary production − surface (g/m^3/d)
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

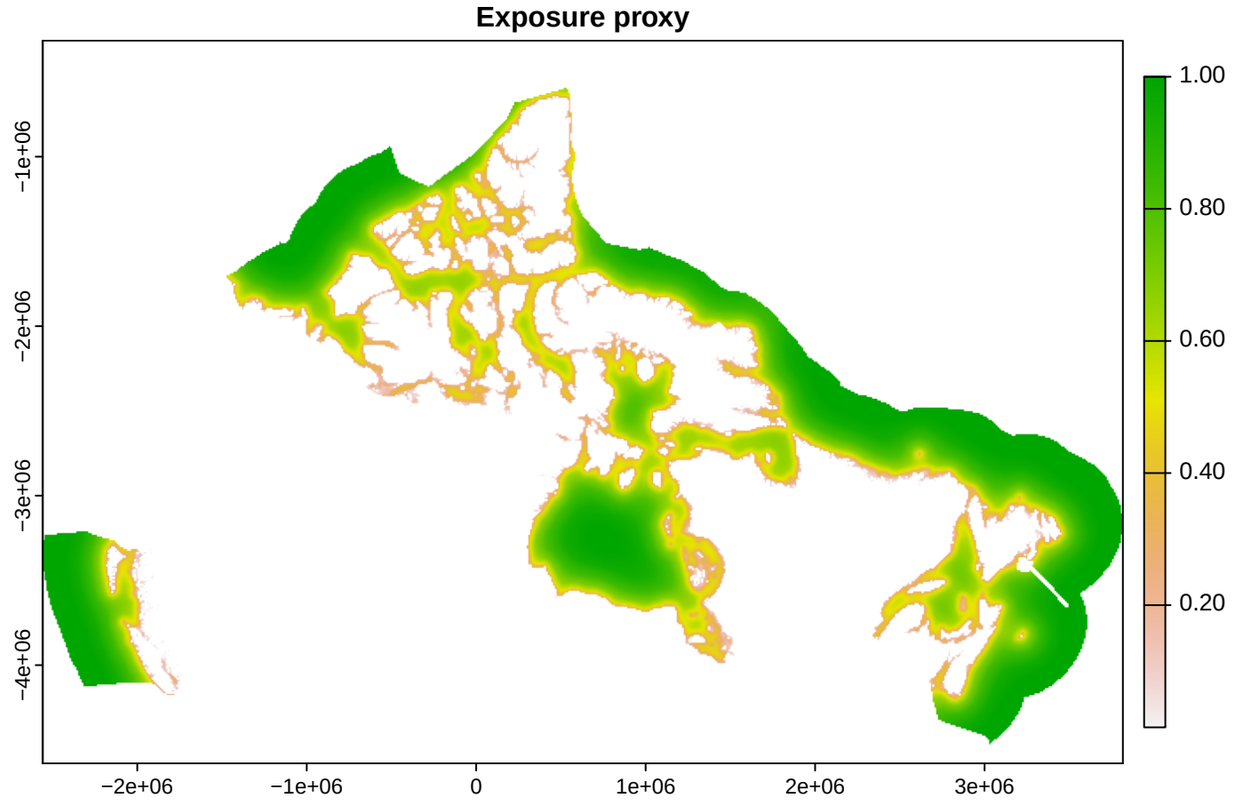

Mean current velocity − seafloor (m/s)
0.25
0.20
0.15
0.10
0.05
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

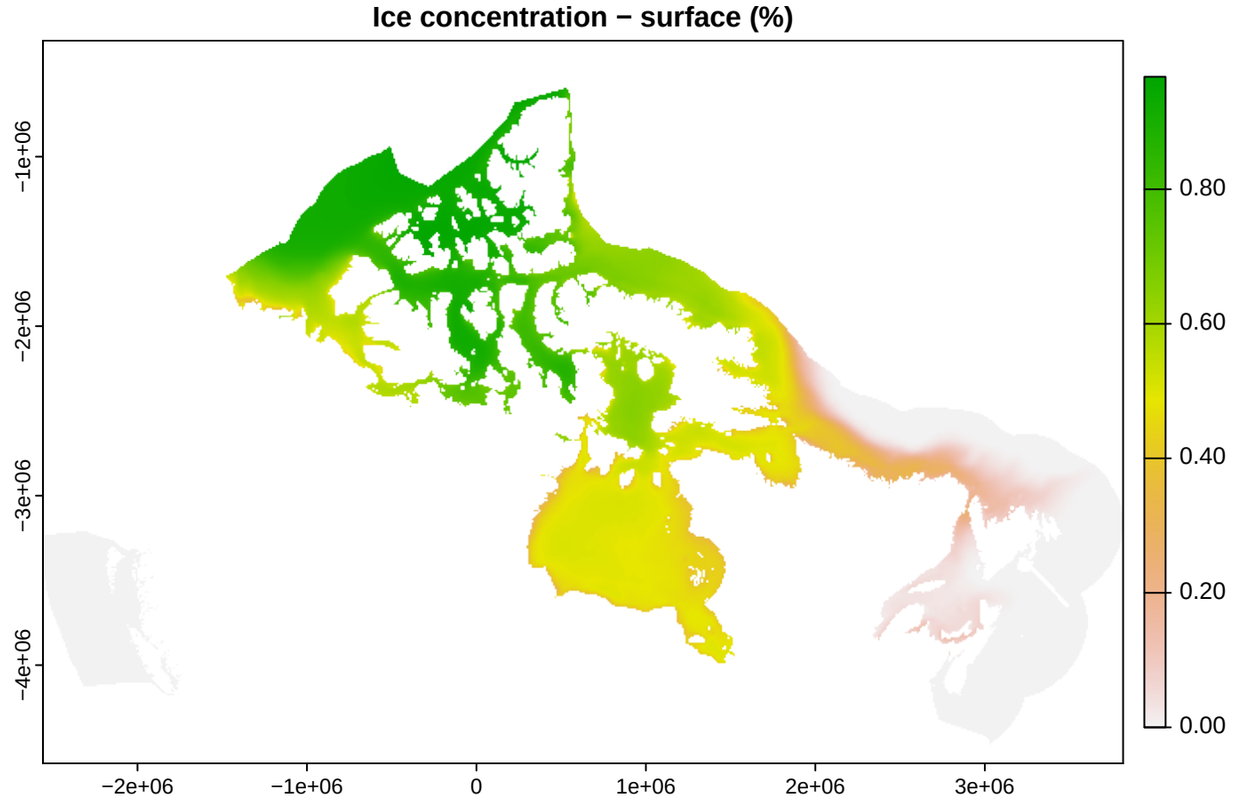

Distance to rivers − broad (m)
800000
600000
400000
200000
0
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

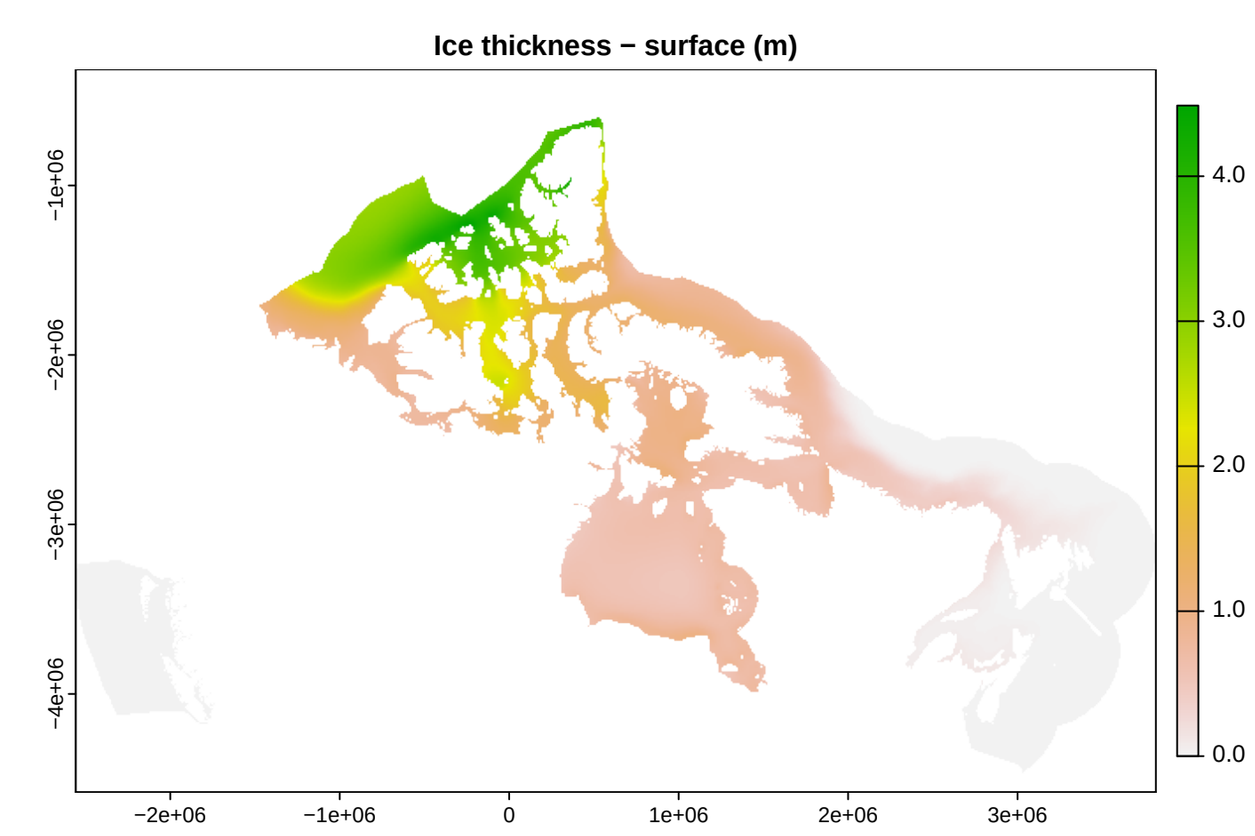

Distance to rivers − fine (m)
500000
400000
300000
200000
100000
0
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

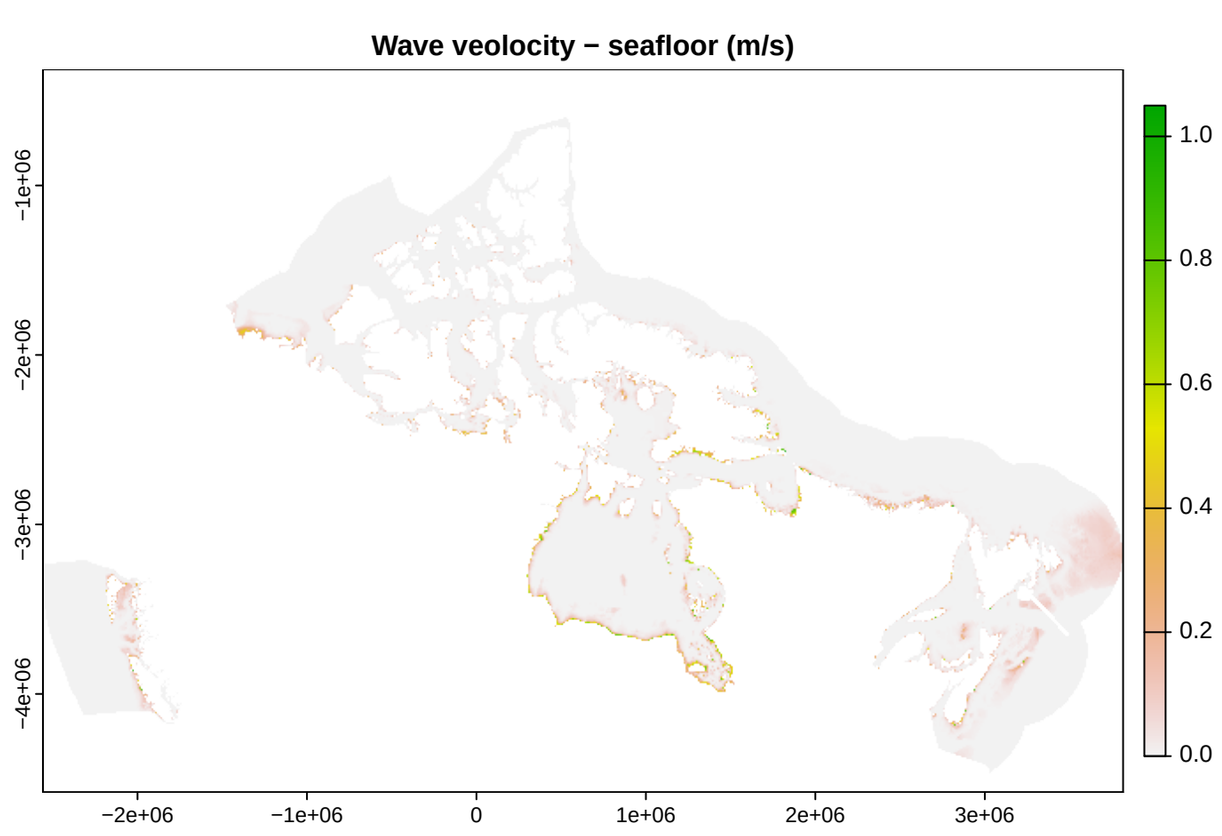

Distance to rivers − medium (m)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
600000
500000
400000
300000
200000
100000
0

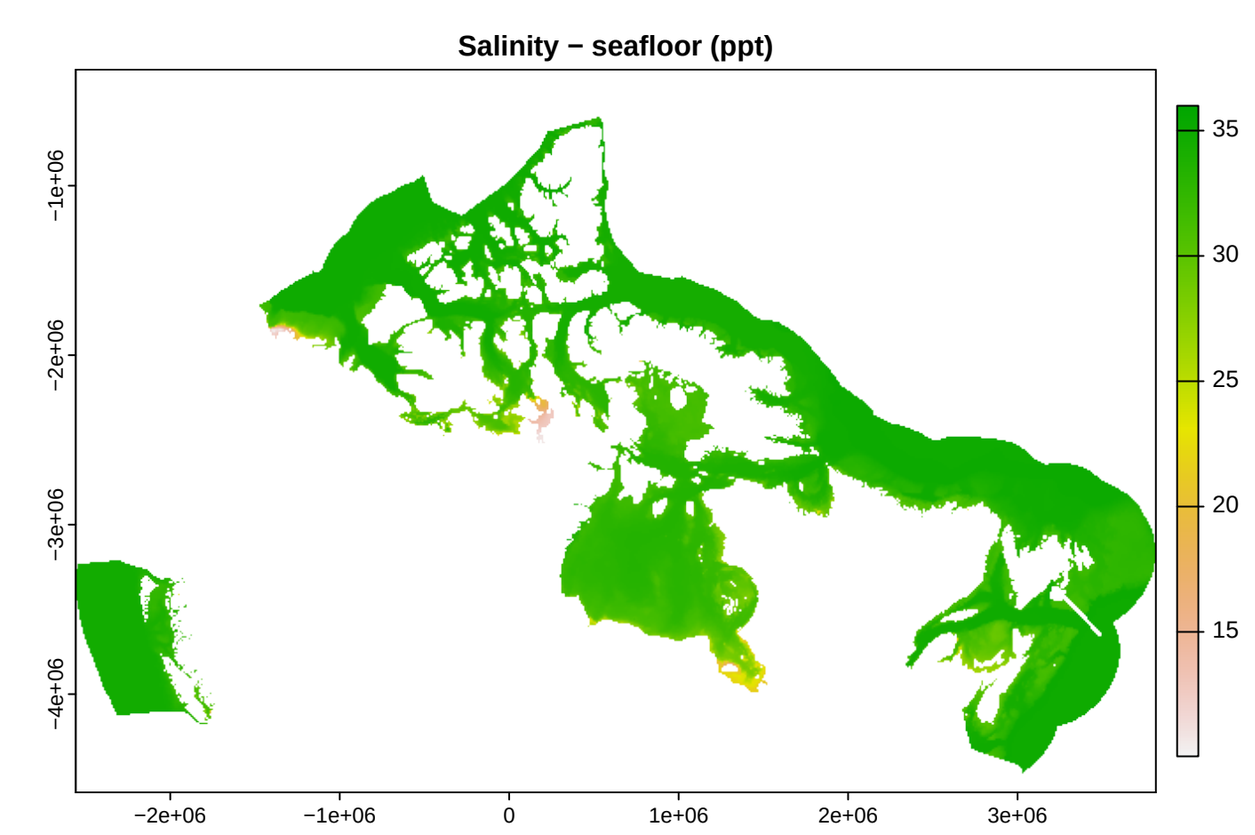

Distance to shore (m)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
350000
300000
250000
200000
150000
100000
50000

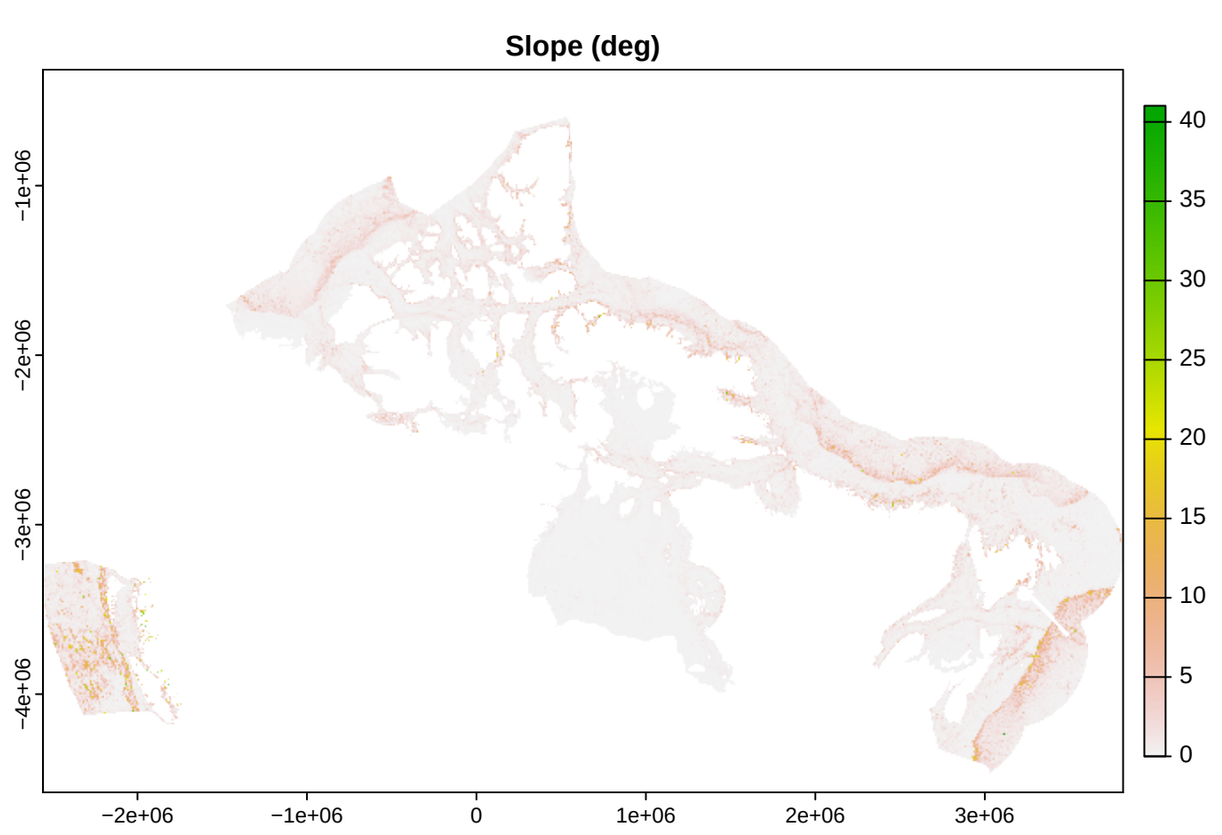

Exposure proxy
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
1.00
0.80
0.60
0.40
0.20

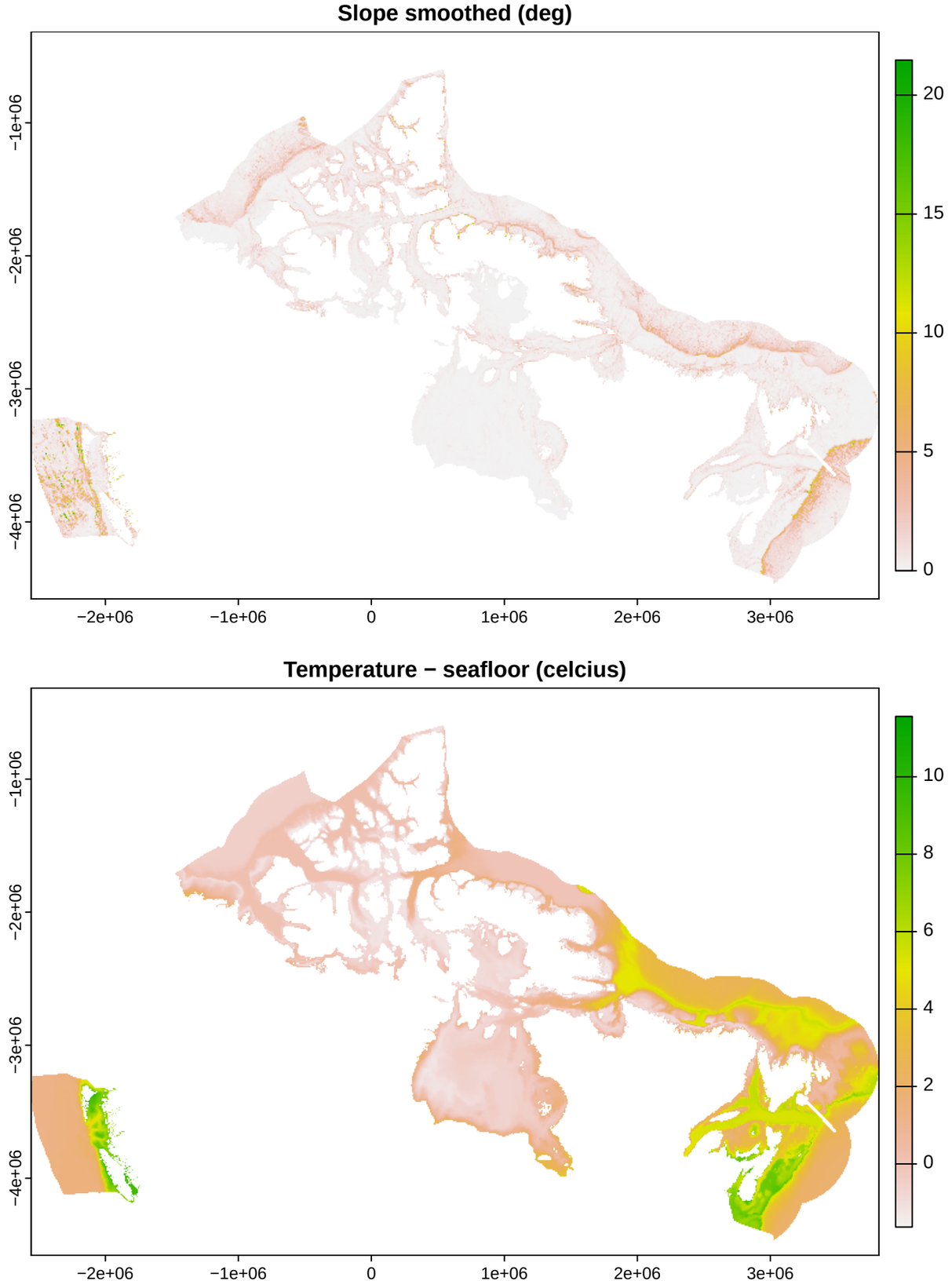

Ice concentration − surface (%)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
0.80
0.60
0.40
0.20
0.00

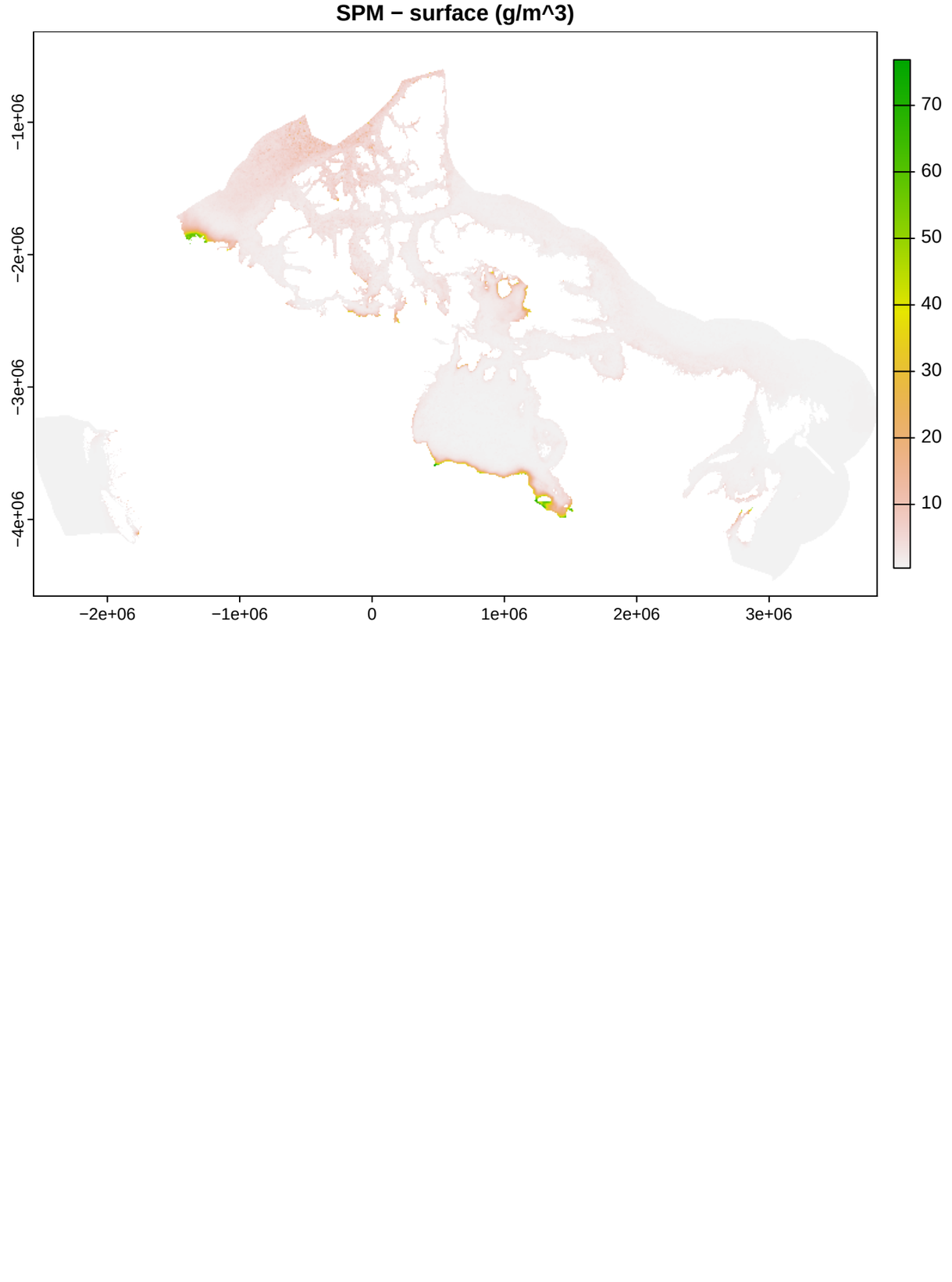

Ice thickness − surface (m)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
4.0
3.0
2.0
1.0
0.0


Wave veolocity − seafloor (m/s)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
1.0
0.8
0.6
0.4
0.2
0.0

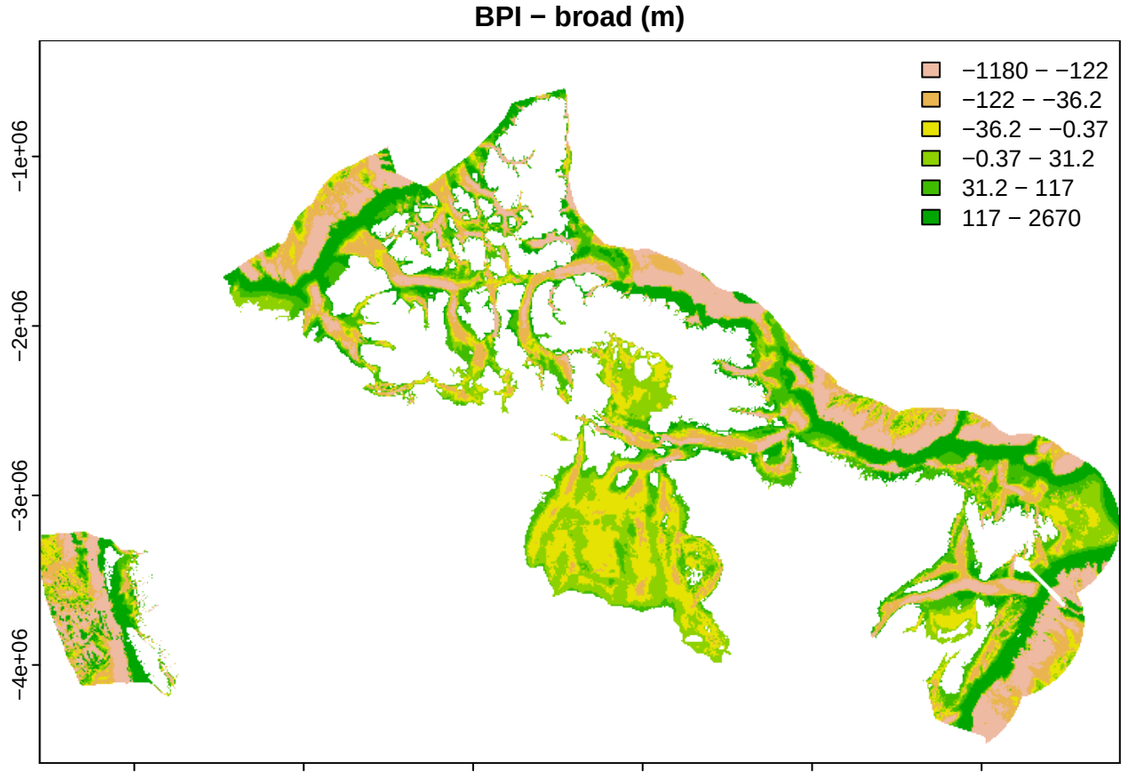

Salinity − seafloor (ppt)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
35
30
25
20
15

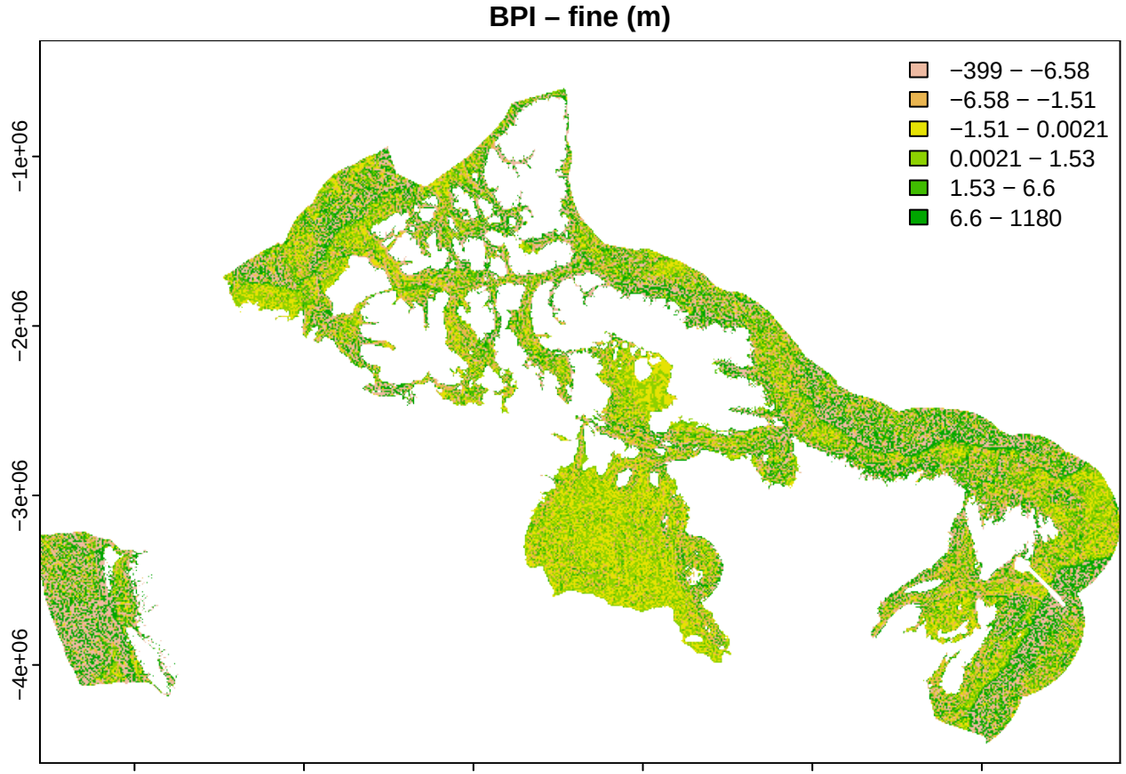

Slope (deg)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
40
35
30
25
20
15
10
5
0

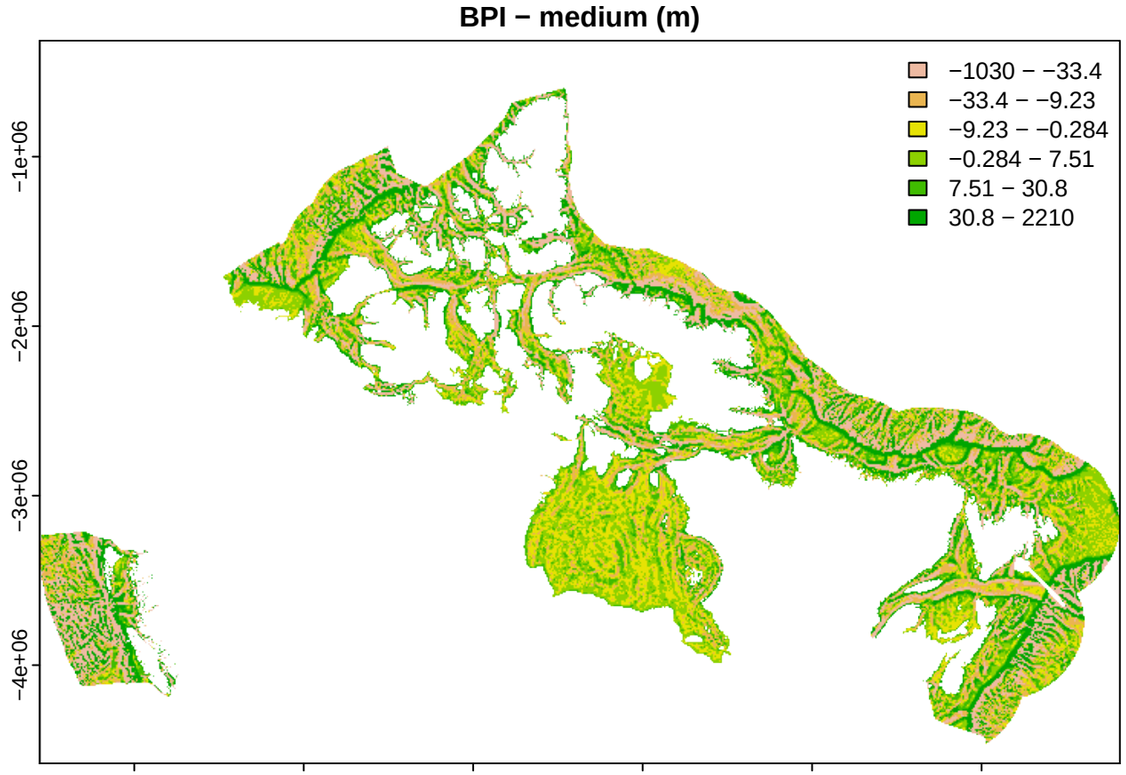

Slope smoothed (deg)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
20
15
10
5
0

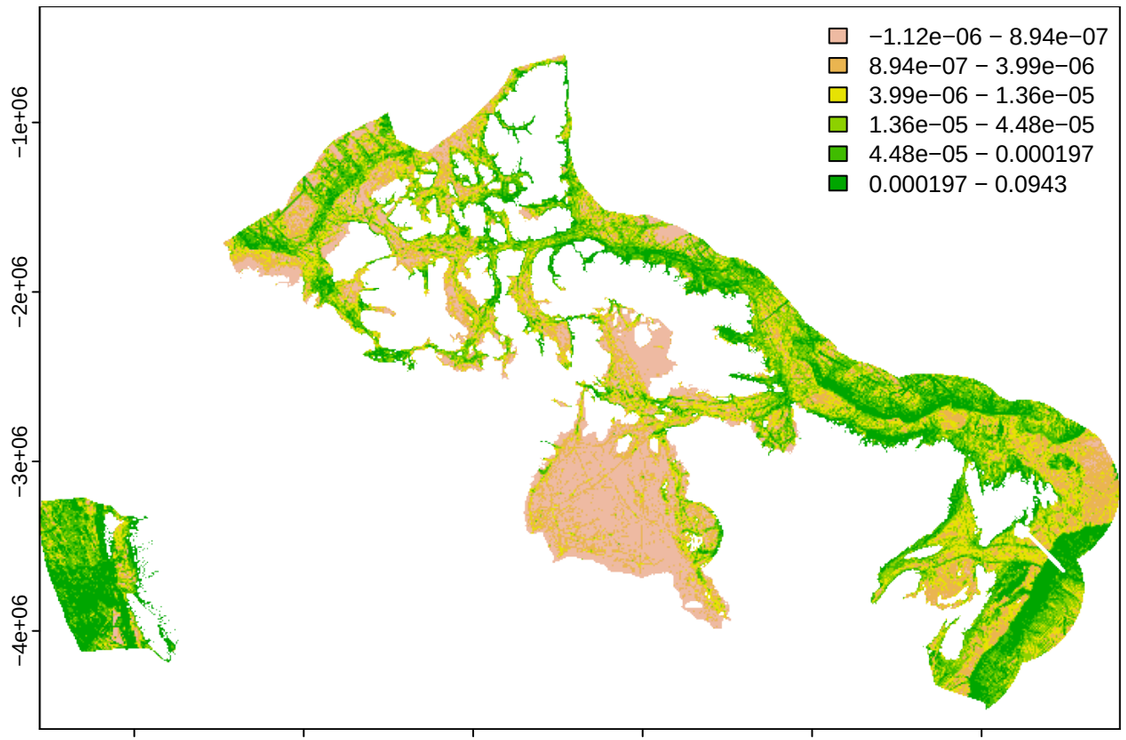

SPM − surface (g/m^3)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
70
60
50
40
30
20
10

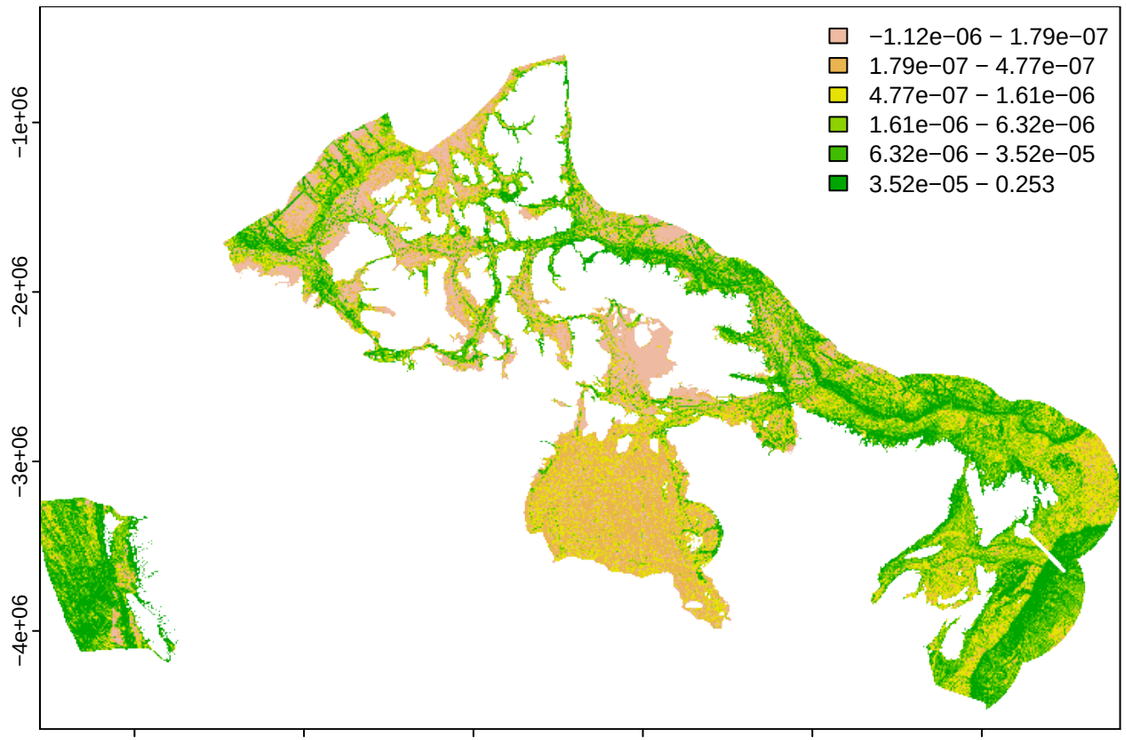
Temperature − seafloor (celcius)
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06
10
8
6
4
2
0

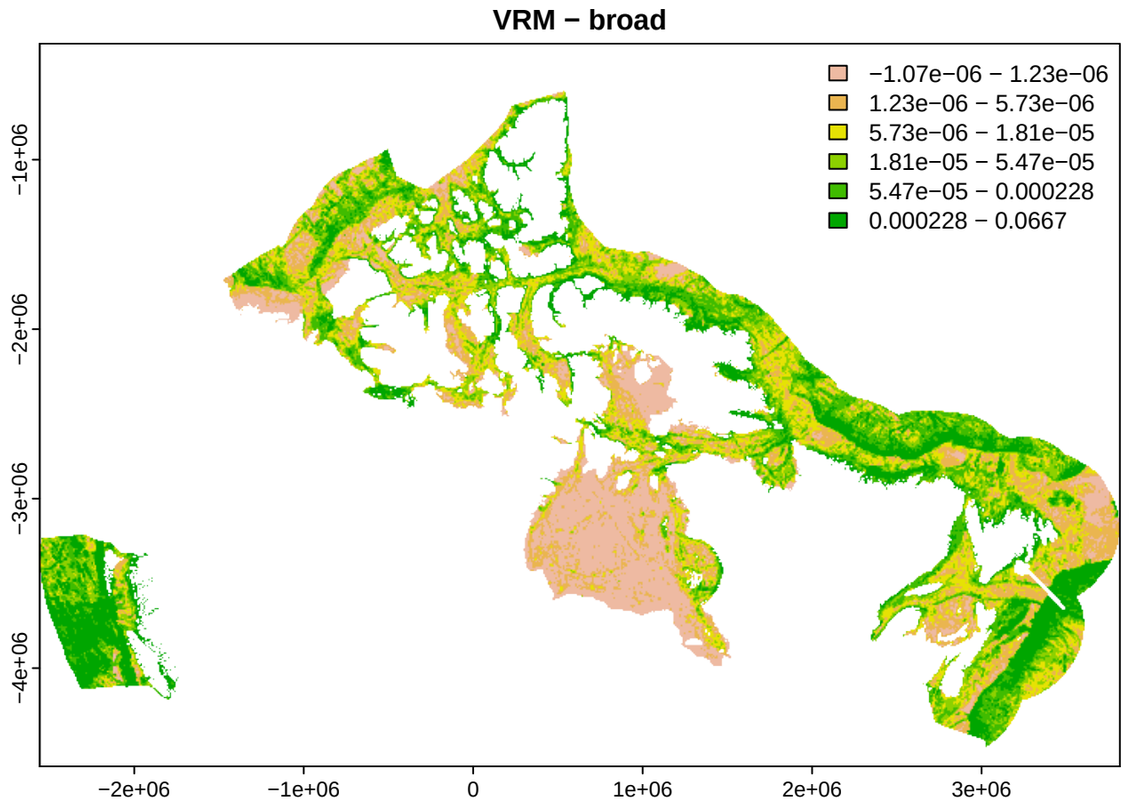

BPI − broad (m)
−1180 − −122
−122 − −36.2
−36.2 − −0.37
−0.37 − 31.2
31.2 − 117
117 − 2670
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06


BPI – fine (m)
−399 − −6.58
−6.58 − −1.51
−1.51 − 0.0021
0.0021 − 1.53
1.53 − 6.6
6.6 − 1180
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

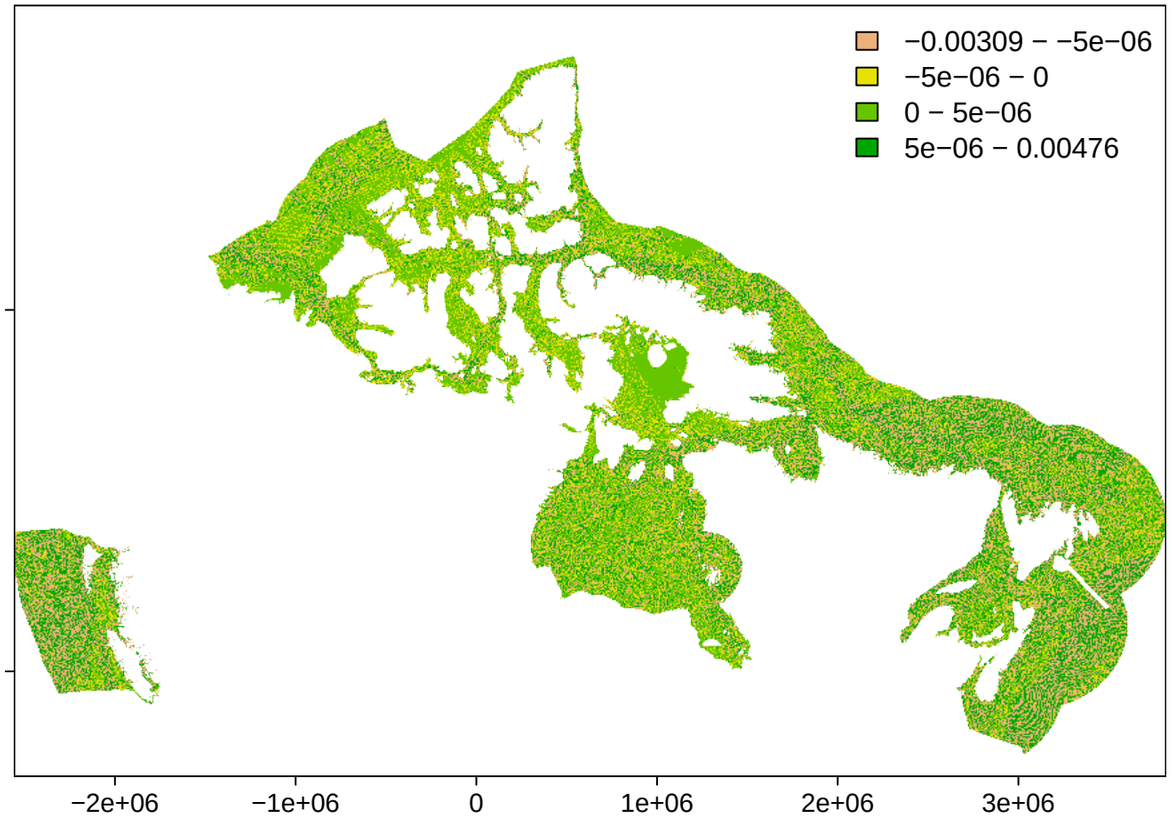
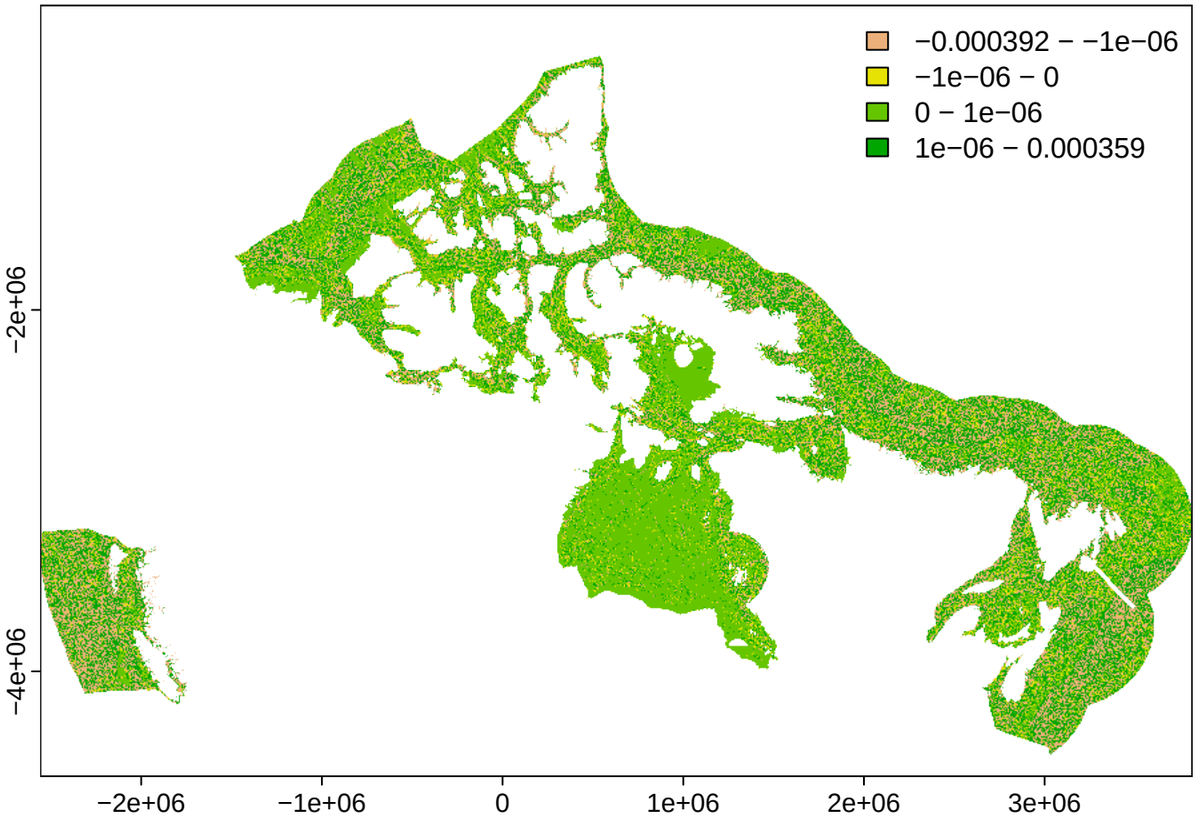

BPI − medium (m)
−1030 − −33.4
−33.4 − −9.23
−9.23 − −0.284
−0.284 − 7.51
7.51 − 30.8
30.8 − 2210
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06


VRM − fine
−1.12e−06 − 8.94e−07
8.94e−07 − 3.99e−06
3.99e−06 − 1.36e−05
1.36e−05 − 4.48e−05
4.48e−05 − 0.000197
0.000197 − 0.0943
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06


VRM − medium
−1.12e−06 − 1.79e−07
1.79e−07 − 4.77e−07
4.77e−07 − 1.61e−06
1.61e−06 − 6.32e−06
6.32e−06 − 3.52e−05
3.52e−05 − 0.253
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06


VRM − broad
−1.07e−06 − 1.23e−06
1.23e−06 − 5.73e−06
5.73e−06 − 1.81e−05
1.81e−05 − 5.47e−05
5.47e−05 − 0.000228
0.000228 − 0.0667
−1e+06
−2e+06
−3e+06
−4e+06
−2e+06
−1e+06
0
1e+06
2e+06
3e+06

Total curvature (rad/m)



Total curvature smoothed (rad/m)