

Aggregated Marine Data Products for Svalbard

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Overview

For the Horizon2020 project **FACE-IT**, experts from the social and natural sciences identified a list of key drivers of change in European Arctic fjord and adjacent coastal socio-ecological systems. Datasets containing these key drivers were sourced, aggregated (Table 1), and are referenced in a central [meta-database](#) (follow QR code). An example analysis highlights the functionality of these data. Data portals like [NPDC](#), [SIOS](#), [PANGAEA](#), and others provide a lot of **FAIR** data (**F**indable, **A**vailable, **I**nteroperable, and **R**eusable) for Svalbard. However, should an investigation require access to multiple different variables (e.g. ocean temperature, ChlA, sea ice thickness, tourist arrivals, etc.) researchers may find themselves spending more time on data wrangling than on research. This is a limitation to the Interoperability and Reuseability of data on these data portals that currently requires a research team to have a dedicated data scientist to manage.

Table 1: Sources for the datasets amalgamated for FACE-IT. Note that there is a heavy focus on time series and station datasets. No geo-spatial datasets are included (e.g. bathymetry, glacier topography).

Site	NPDC	SIOS	PANGAEA	other
Svalbard	10	0	1740	5
Kongsfjorden	7	0	130	10
Isfjorden	3	3	215	7
Storfjorden	0	0	84	0

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Hundreds of environmental datasets throughout Svalbard combined via the **FACE-IT** project and ready for analyses



Example analysis

With great amounts of data come great possibilities. To highlight the utility of data aggregated for **FACE-IT**, key drivers in Kongsfjorden were averaged by date, depth, and regions adapted from Hop et al. (2002; The marine ecosystem of Kongsfjorden, Svalbard) (Figure 1). Then temperature (°C) data were compared to: oxygen (% sat), chlorophyll A (µg/L), & PAR (µmol/m²/s) (Figure 2). With the exception of PAR data in the middle fjord, there was not enough overlap between temperature and the other key drivers to determine meaningful relationships. This highlights the need to find additional datasets for these key drivers.

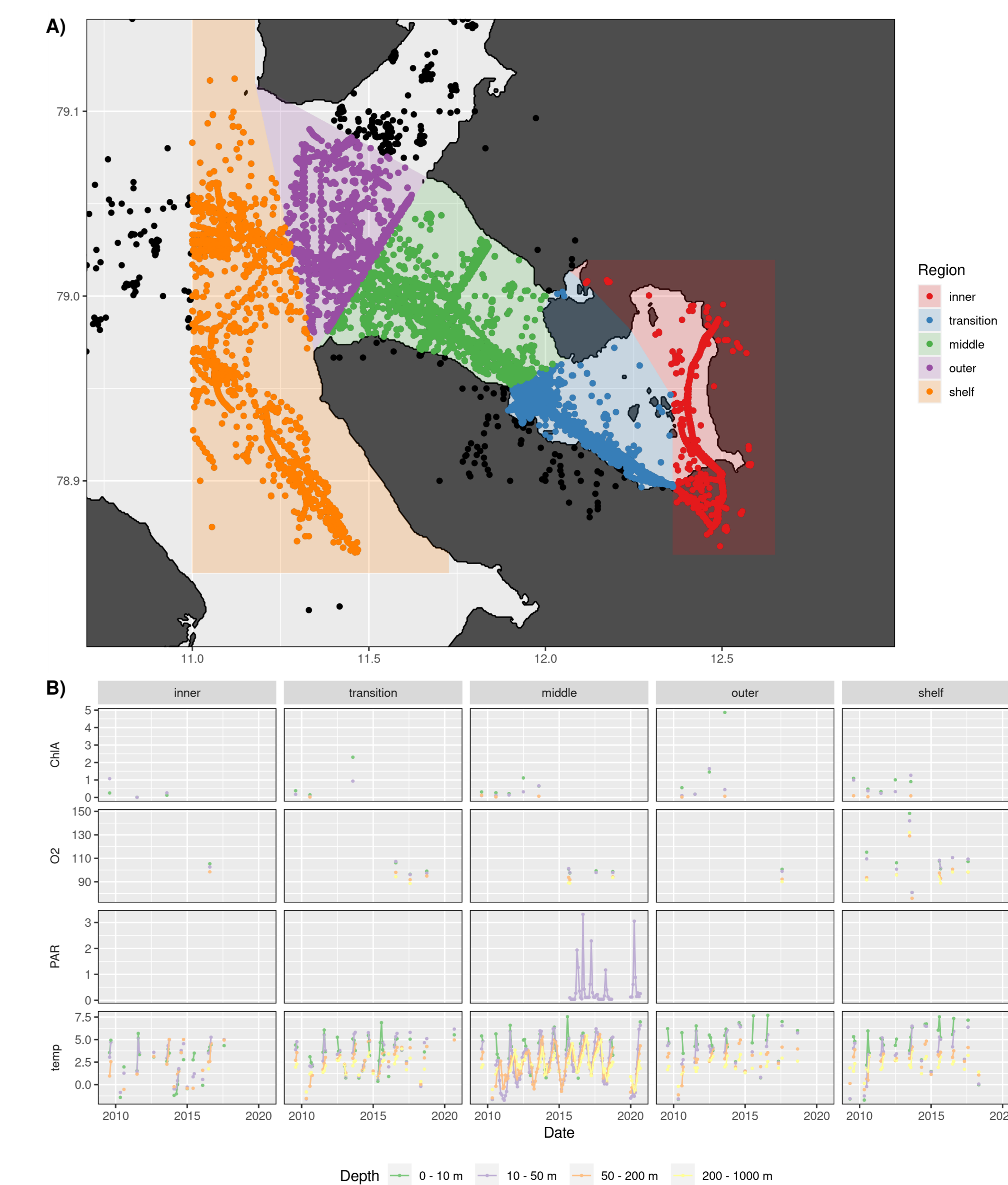


Figure 1: Data aggregated for Kongsfjorden. A) Data points and are coloured by the region of the fjord in which they are found, with black dots for data outside of regions. B) Dot and line plots of averaged monthly data for key drivers (see text). Columns show fjord regions and rows show data available per key driver. Colours show the depth of the data, and lines connect two or more months with continuous data.

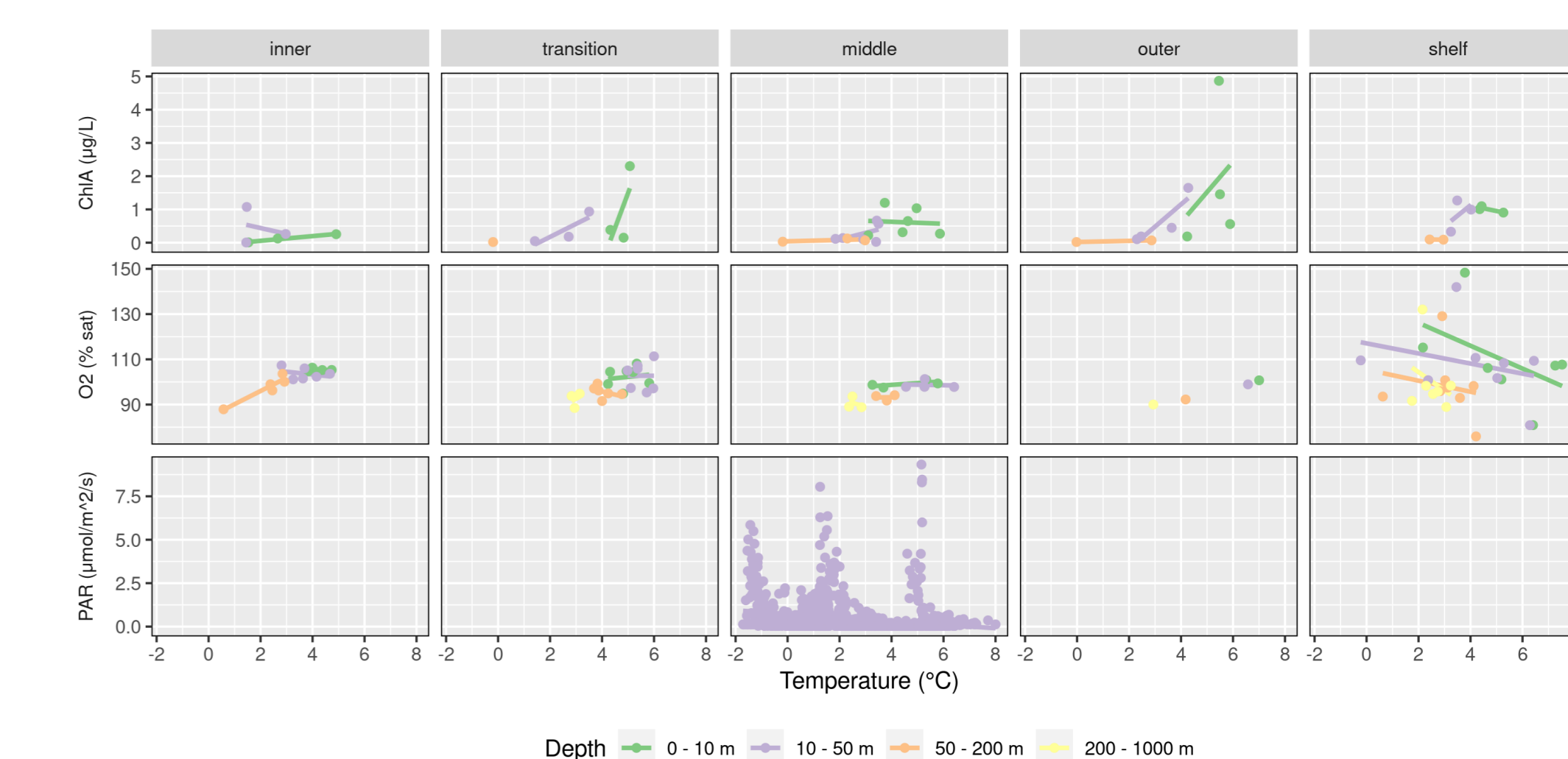


Figure 2: The relationship between the key drivers (see text). X-axes show temperature, y-axis of each row shows the key driver being compared. Dots show daily data, and straight lines show linear models of the relationships. Colours show the depth of the data.