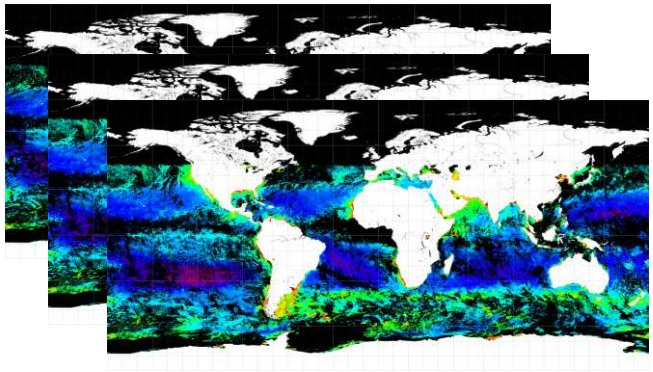
OC – CCI Progress

System Prototype



MERIS

SeaWiFS

MODIS

Atmospheric Correction using best algorithms from round-robin comparison

Merging, Bias Correction

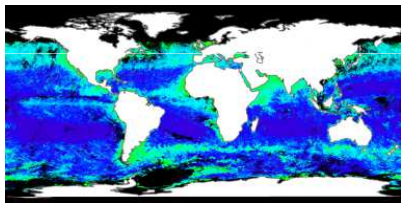
Ocean products using best algorithms from round-robin comparisons

Global In-situ database

Quality Control and Scientific Analysis

Unified multi-sensor Products

Uncertainty characterisation

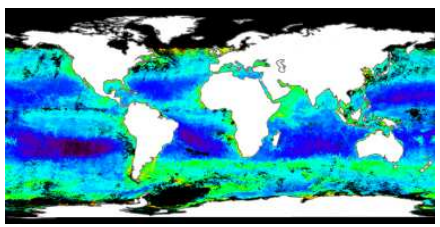


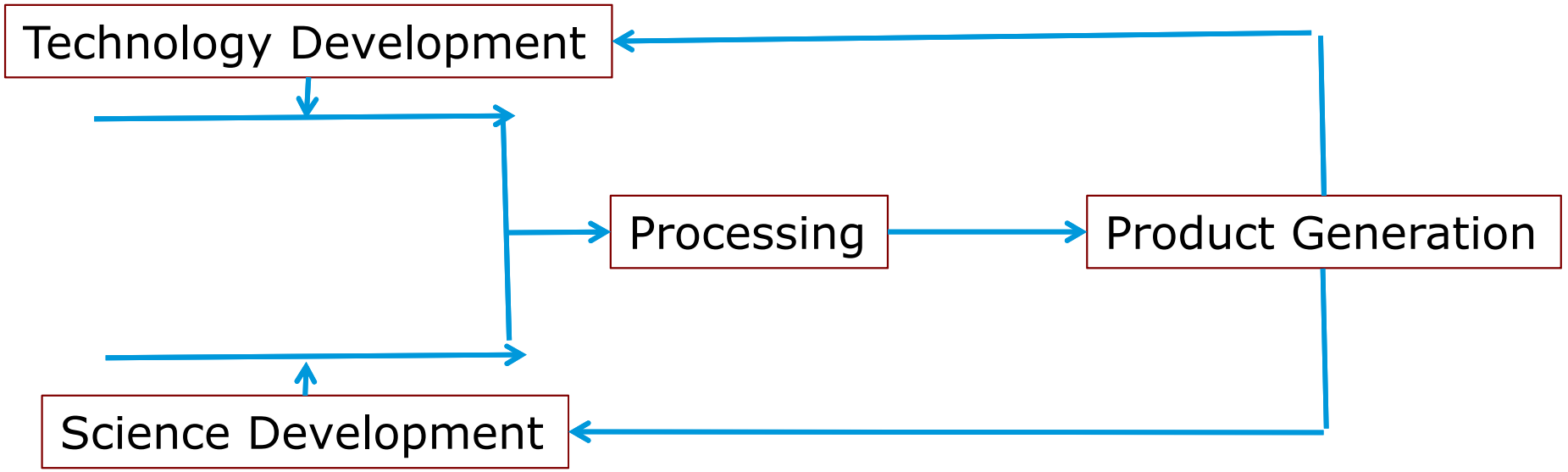
User Community

Modellers

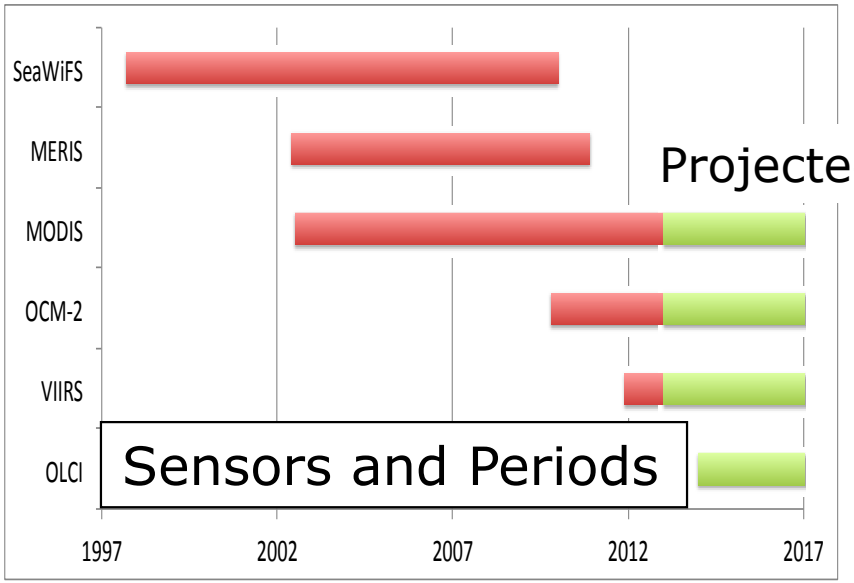
Oceanographic Scientists

Earth Observation Scientists

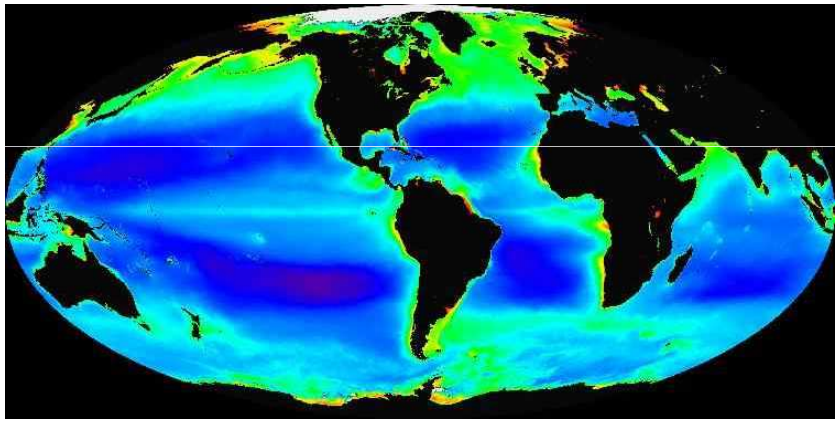



Technology Development
Processing
Product Generation
Science Development

OC-CCI data inputs and time periods

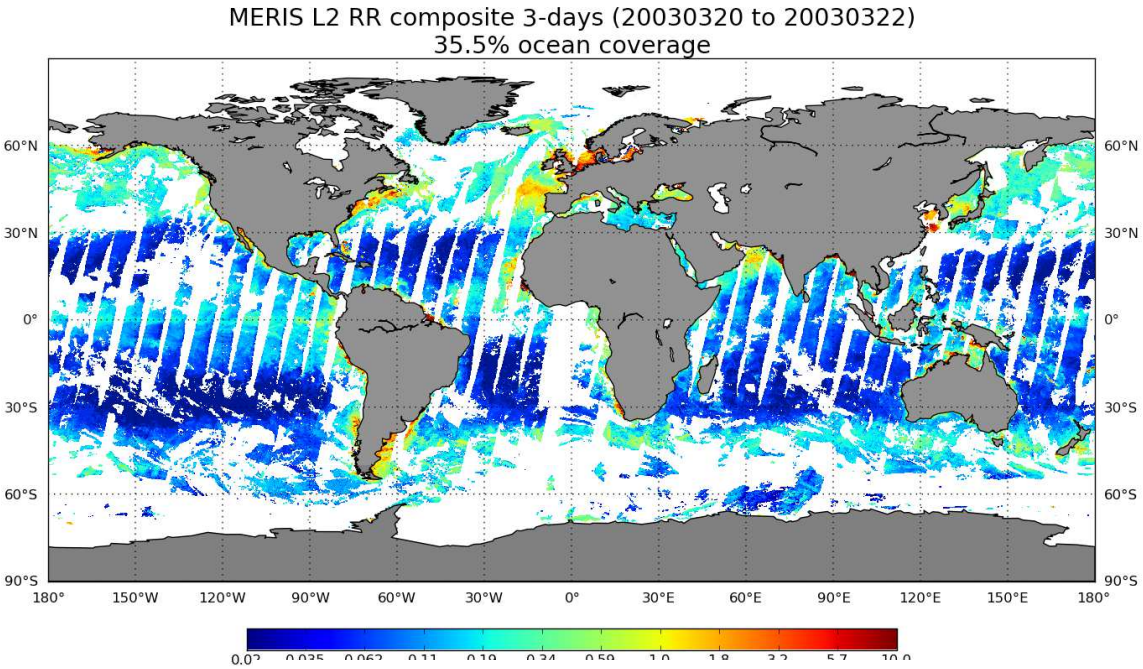


Coverage: Global



In-situ Reference Data

MERMAID (MERIS Match up in-situ Data: 2007 - Present
MOBY (Marine Optical Buoy program):1996 - Present
NOMAD (NASA bio-Optical Marine Algorithm Data): 1997 – 2007
SeaBASS (SeaWiFS Bio-optical Archive and Storage System):1997 – 2012
AMT (Atlantic Meridional Transect):1995 – Present
AERONET-OC: 2001 – Present
Bedford Institute of Oceanography Bio-optical Database:1997 – Present
Boussole (Buoy for the Acquisition of Long Term Optical Time Series): 2005 - Present
ECMWF (European Centre for Medium-Range Weather Forecasts):1979 - Present



Chlorophyll concentration (mg m^{-3})

POLYMER:

Selected Atmospheric Correction Algorithm for MERIS

One of the advantages: Improved spatial coverage (User Requirement)

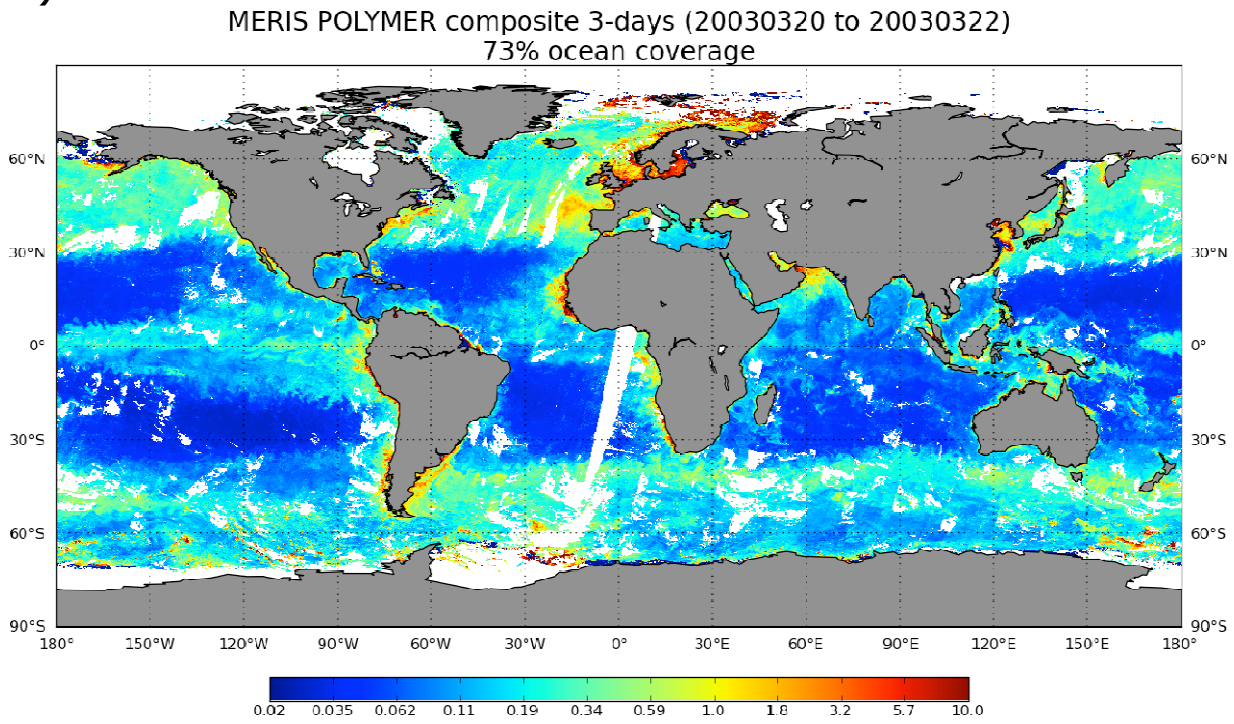
Note: MyOcean will be using OC-CCI products as standard products

Directly applicable to Sentinel-3 OLCI

MEGS ocean coverage:35.5%
POLYMER ocean coverage: 73%

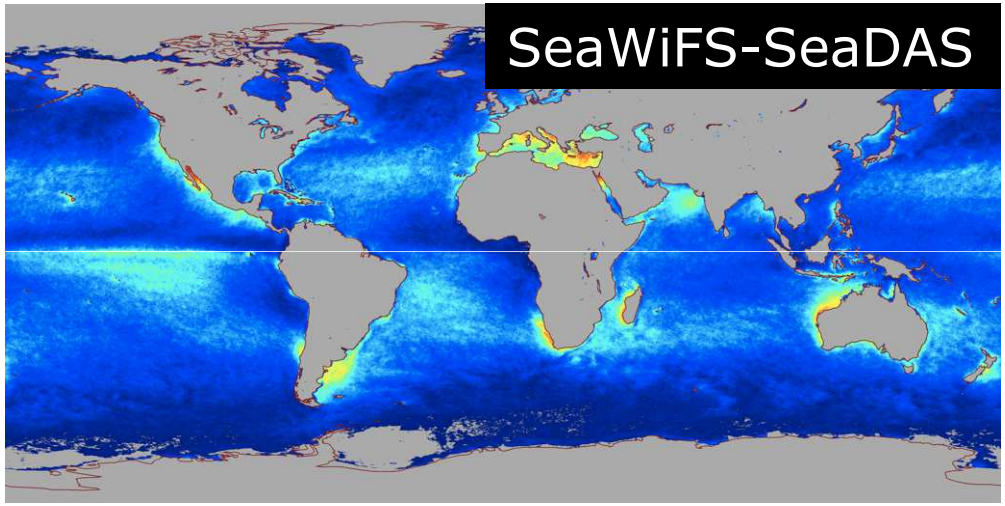
Example: Three-day composite Chlorophyll concentration (20-03-2003 to 22-03-2003)

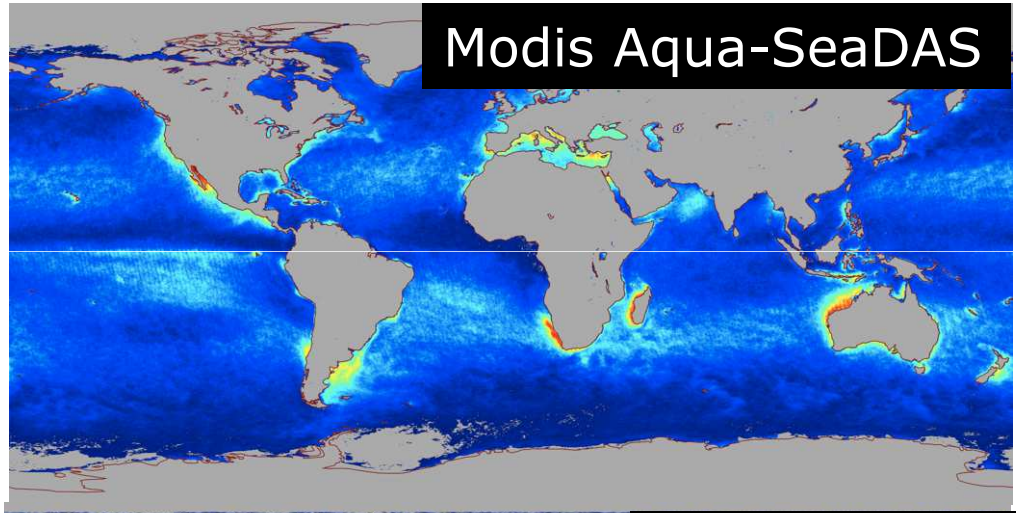
Note: Verification on-going. For example, are all high-latitude values reliable?

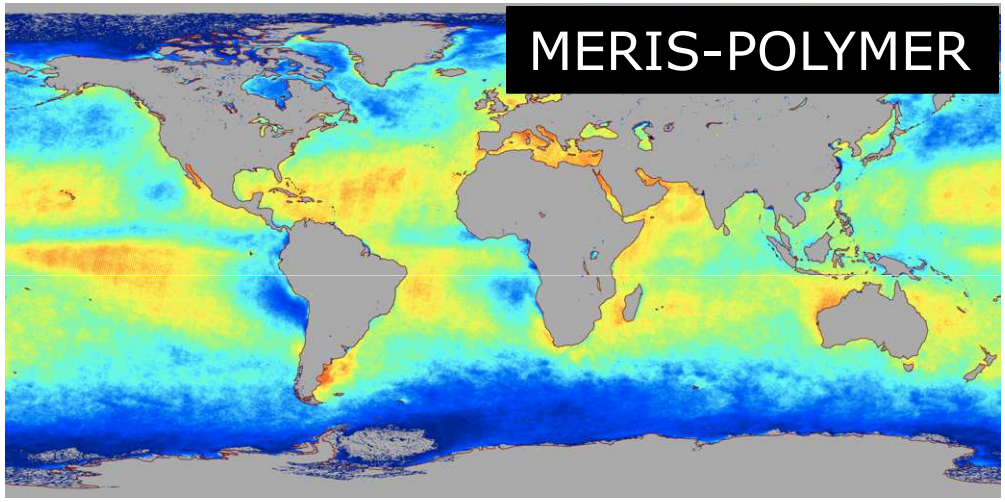


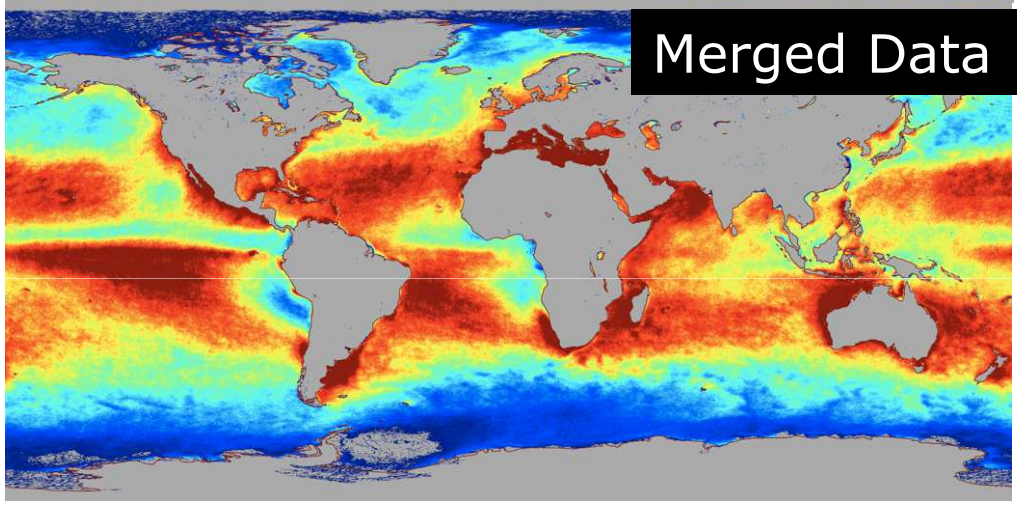
Chlorophyll concentration (mg m^{-3})

Geographic distribution of frequency of coverage of retrieved data

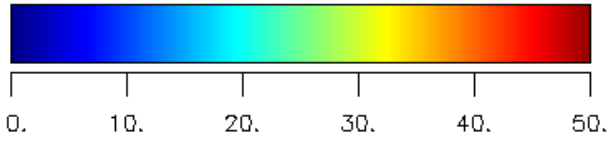








- Inter-sensor bias corrected prior to merging, to avoid spurious trends in merged data
- Band-shifted to produce consistency in data across sensors
- Enhanced contribution from MERIS due to POLYMER capability to deal with sun glint and thin clouds

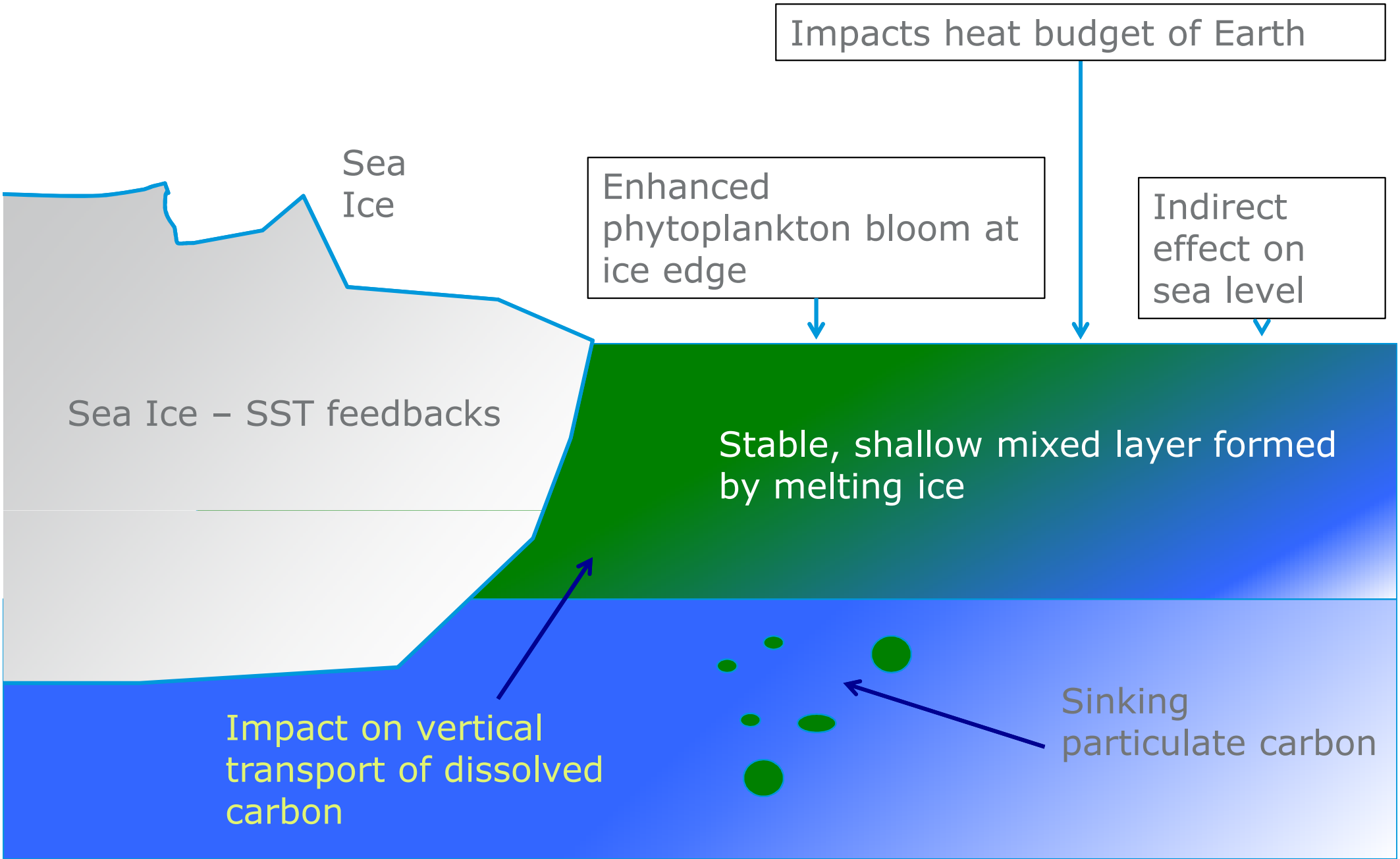


Daily coverage in %

Planned Phase 2 Plans

- Extension of OC-CCI products to Case-2 (optically-complex coastal) waters
- Improved auxiliary data incorporation in processing chain (atmospheric correction
- Harmonise atmospheric-correction algorithms across all sensors
- Extend time frame through use of Sentinel-3 and other sensors, notable VIIRS and OCM-2
- Invoke iterative loop in algorithm selection chain, to ensure CCI products keep abreast of new developments in field
- Improve error characterisation in each of the major optical classes through incorporation of additional in situ data, especially in poorly-represented classes
- Develop and exploit synergy with other CCI ECVs to address climate issues

The Arctic: where Sea Ice, Sea Level, Sea Surface Temperature and Ocean Colour act together to influence climate



Inter-Ocean-CCI interactions: some thoughts

- SST impact on marine primary production?
- Ocean colour masks include an ice mask: complement to SI-CCI? SST ice mask?
- SST – Ocean colour impact/influence on marine aerosols?