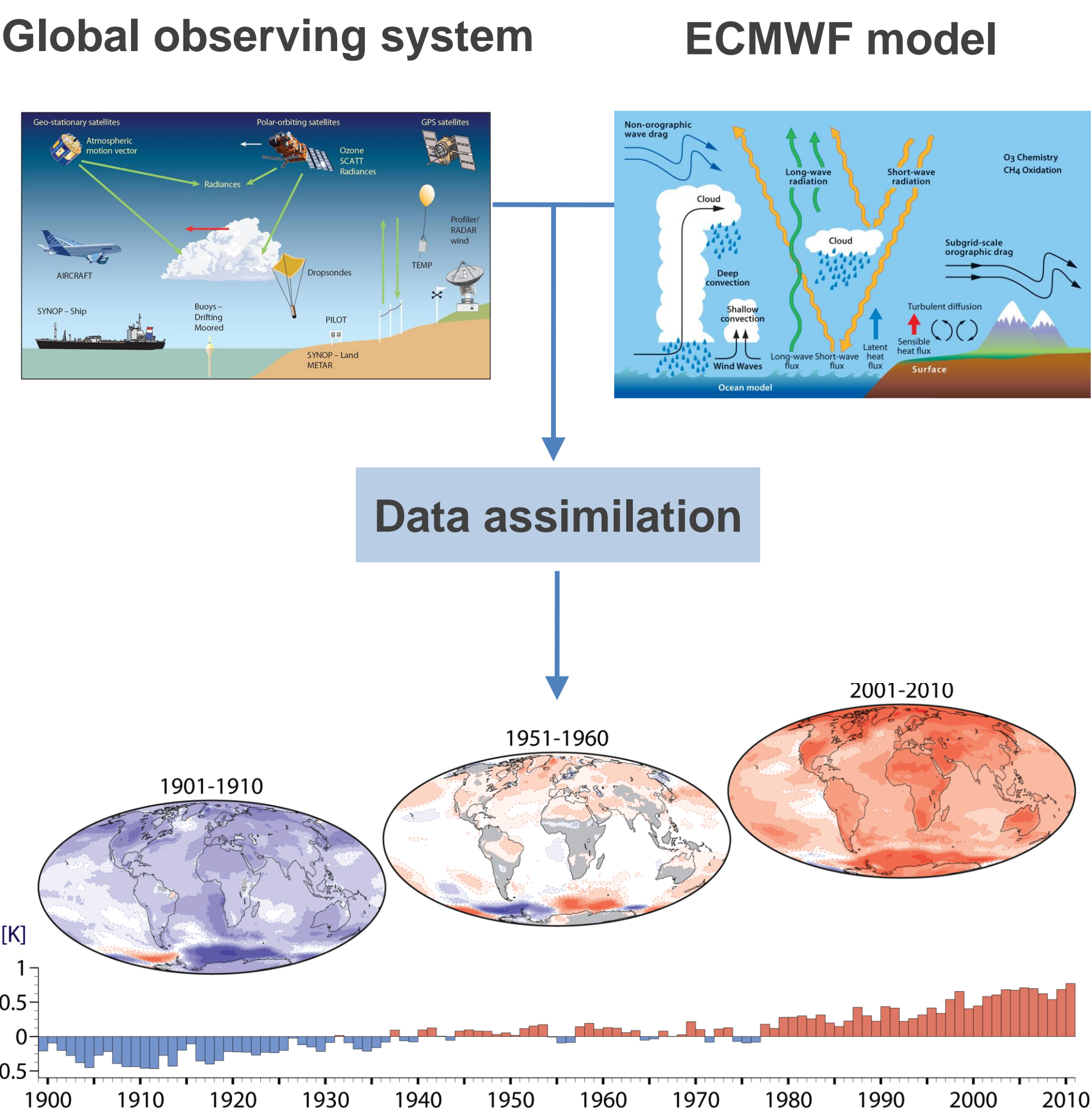


What is reanalysis and why is it important?

- Offers a **detailed overview of the weather** including ocean waves over the past 40-100 years.
- **Complete**: combining vast amounts of **observations** into **global fields** using the laws of physics and advanced data assimilation techniques.
- **Consistent**: use the same physical model throughout the entire period.
- **State-of-the-art**: use the best available observations (e.g. reprocessed) and latest available model at highest feasible resolution.
- **ERA5** is to provide a large number of **essential climate variables** within the C3S Climate Data Store, including ocean waves parameters.

Reanalysis allows for a close monitoring of the Earth's climate system also where direct observations are sparse or inexistent.



ERA5 fact sheet

ERA-Interim is not future proof and needs replacement by **ERA5**.
ERA5 has important innovations to maintain **state-of-the-art** climate reanalysis

Improvement	ERA-Interim	ERA5
Extended Period	1979 - present	Planned 1950 - present
Better Model	2006, 4D-Var	2016, 4D-Var
Consistent input (radiation and surface)	As in operations, (inconsistent sea surface temperature)	Appropriate for climate , e.g., evolution greenhouse gases, volcanic eruptions, sea surface temperature and sea ice
Higher resolution	79 km globally 60 levels to 10 Pa	31 km globally 137 levels to 1 Pa
Provide Uncertainty estimate	None	Based on a 10-member 4D-Var ensemble at 62 km
Higher Output frequency	6-hourly Analysis fields	Hourly (3-hourly uncertainty estimate), Extended list of parameters ~ 5 Peta Byte
Extra Observations	Mostly ERA-40, GTS	Various reprocessed CDRs , latest instruments
Info on data usage		Observation feedback archive
Bias corrections	Satellite radiances	Also ozone, aircraft, surface pressure
Land Downscaling	No downscaling	9km HTESSEL model
Ocean waves	111 km globally	40 km globally

ERA5 Public Release Plan:

17 July 2017: Release 2010-2016.

- Q3/Q4 2017:** ERA5 continuous updating.
- ERA5: < 3 months after real time (final product).
 - ERA5T: short delay (< 1 week, preliminary product).

Q3/Q4 2017: Access to ERA5 observations from 2010 onwards.

- Q2 2018:** Complete the release of 1979-2009.
- Continue ERA5 continuous updating.
 - Continue ERA-Interim for at least another 6 months.

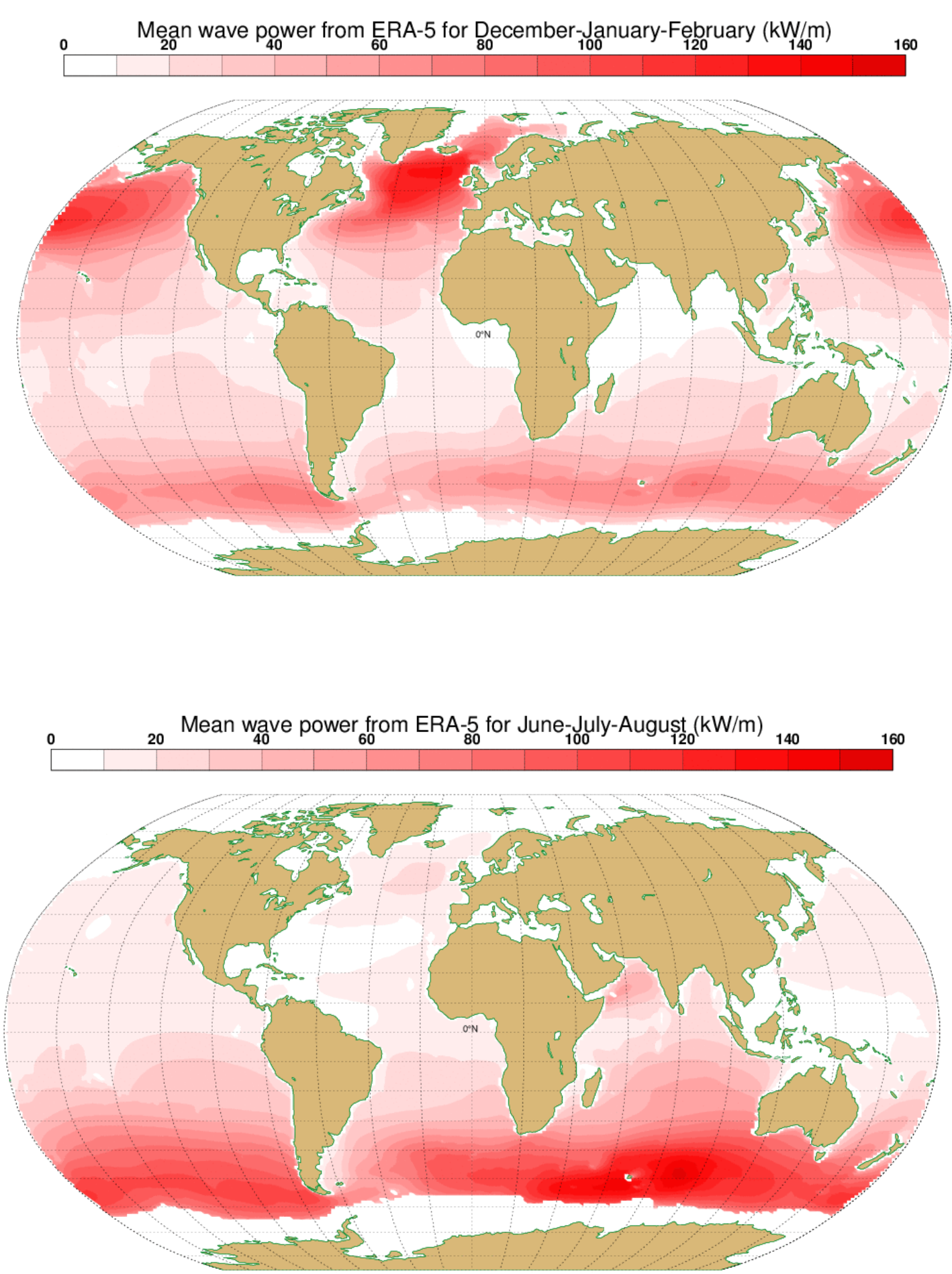
Q1 2019: Release 1950-1978.

Currently, public access to the data is only possible via the [ECMWF WebAPI](#).

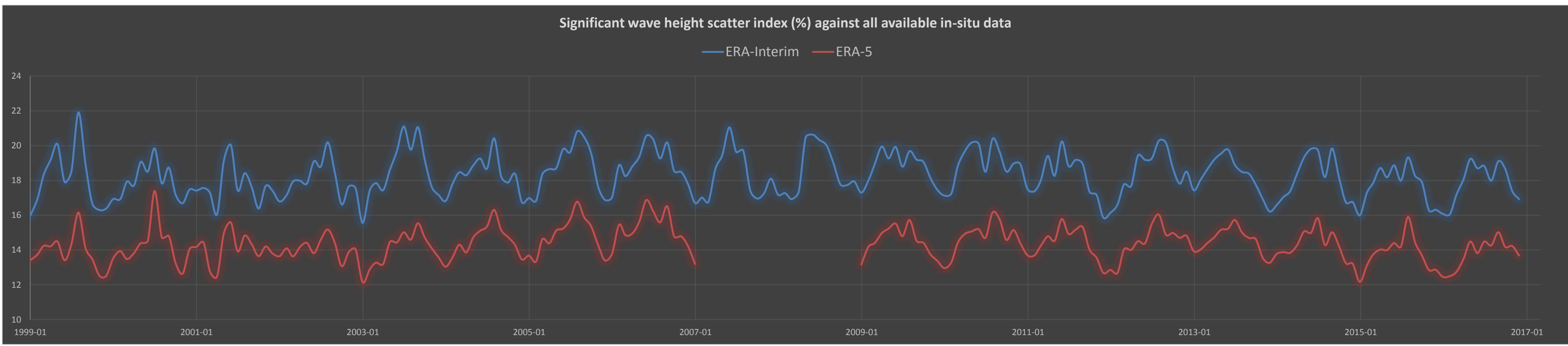
From 2018 onwards, ERA5 will be made available via the C3S Climate Data Store (CDS).

<https://climate.copernicus.eu/era5-public-release-2010-2016>

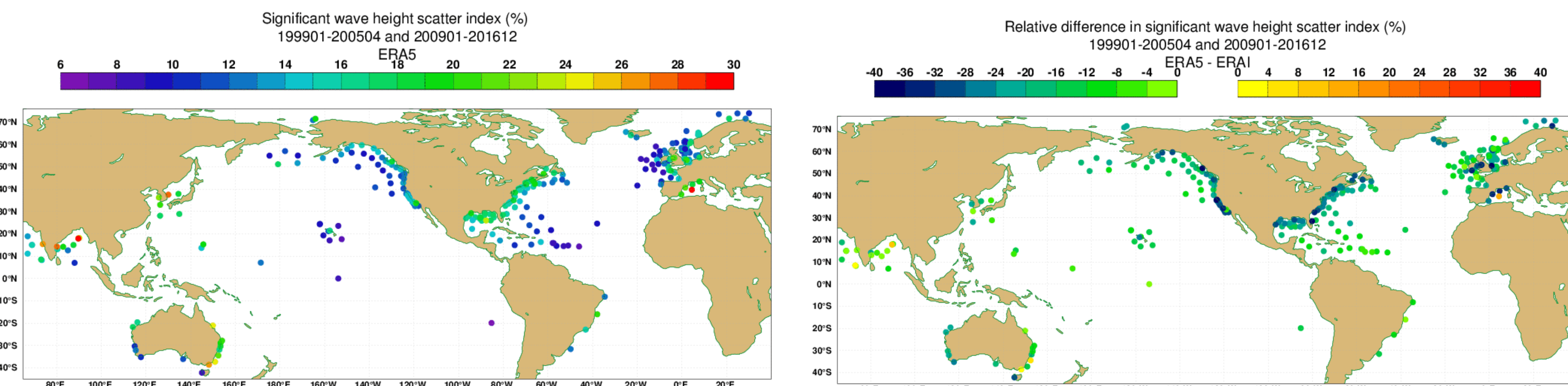
It contains many wave parameters.



Much improved with respect to ERA-Interim:



Preliminary comparison of ERA5 wave heights with independent in-situ observations.



The scatter index is the standard deviation of the difference normalised by the mean of the observations.
The wave observations were not used in the model data assimilations.