



# The GEOSS Portfolio for Science and Technology

*Produced by ST-09-02*

Featuring:

**Climate: Capacity Building of Operational  
Oceanography and Climate Adaptation**



# Capacity Building of Operational Oceanography and Climate Adaptation



**Added Value of GEOSS for the S&T  
Communities**



# Capacity Building of Operational Oceanography and Climate Adaptation

## **Co-Lead Danish Meteorological Institute (Denmark)**

### **Partners:**

Council for Scientific and Industrial Research (South Africa); GKSS  
(Germany);

Institute of Atmospheric Physics-Chinese Academy of Sciences (China);

Korea Ocean Research and Development Institute (South Korea);

Mercator-Ocean (France);

Nansen Environment and Remote Sensing Centre (Norway);

National Oceanographic and Atmospheric Administration (United States);

NASA Jet Propulsion Laboratory (United States) and the

Universidad de Concepcion (Chile)



# Capacity Building of Operational Oceanography and Climate Adaptation

## **Rational**

Oceans and seas play a major role in the climate system both acting as climate regulators.

They also are particularly sensitive to climate variations.

Marine strategies for adapting to climate change have been made for many regional seas, in order to reach a safe, sustainable and efficient marine economy.

Operational oceanography, by assimilating earth observations into models and forecasting the future status of the ocean and seas, is an indispensable tool in realising these adaptation strategies.



# Capacity Building of Operational Oceanography and Climate Adaptation

This example demonstrates a **global scale capacity building effort** on operational oceanography and its possible application for adaptation measures in developing countries.

Through cooperation among European Union (EU), China and South Korea partners under GEOSS, high resolution European weather-ocean-wave forecasting systems have been implemented for Northwest Pacific Coastal/Shelf seas and demonstrated in an operational mode.

Similar efforts are expected to be taken for Africa and Latin America by partners from EU, the United States, and relevant developing countries.



# Capacity Building of Operational Oceanography and Climate Adaptation

The operational ocean monitoring and forecasting capacity enables a **better disaster prevention in developing countries** to have and more efficient climate adaptation measures in coastal engineering and integrated management.

Relevant GEO Task: CB-09-03d “Building Capacity for Operational Oceanography.”



# Capacity Building of Operational Oceanography and Climate Adaptation

## **Significant GEOSS Science and Technology (S&T) issues:**

multi-sensor satellite products;

in-situ observations;

innovative ocean/weather modelling and assimilation techniques for coastal-shelf seas;

multi-lingual information platforms for service (Chinese, Korean and English);

typhoon prediction;

disaster prevention; and

climate change adaptation measures are addressed in this example.

**GEOSS S&T communities benefit** from the exchange of high resolution weather and ocean forecasting and observation data, best-practices of forecasting technology and joint research activities.

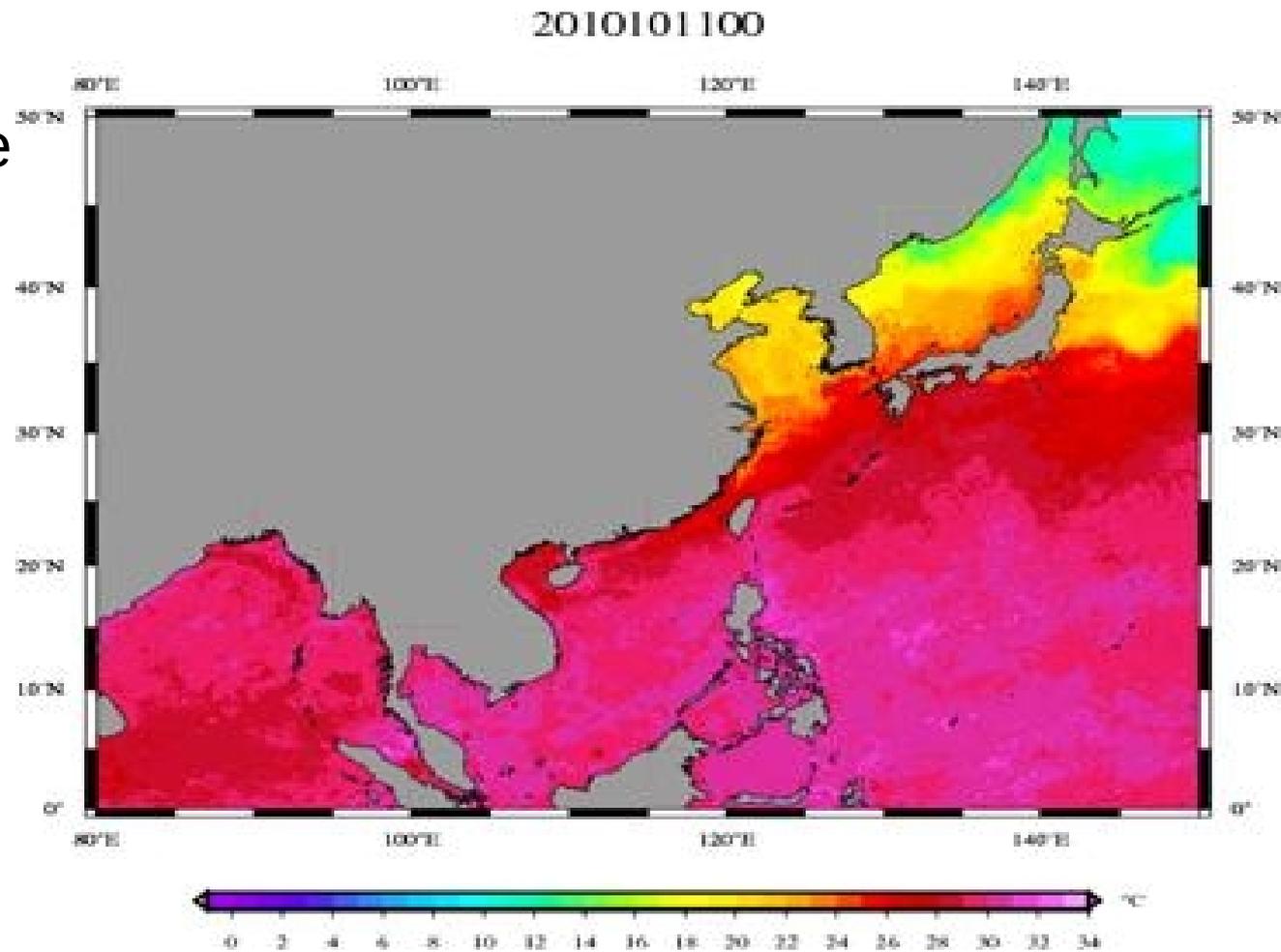


# Capacity Building of Operational Oceanography and Climate Adaptation

## Progress

Several regional operational oceanography demonstration projects are ongoing.

Example of an Asian forecasting system.

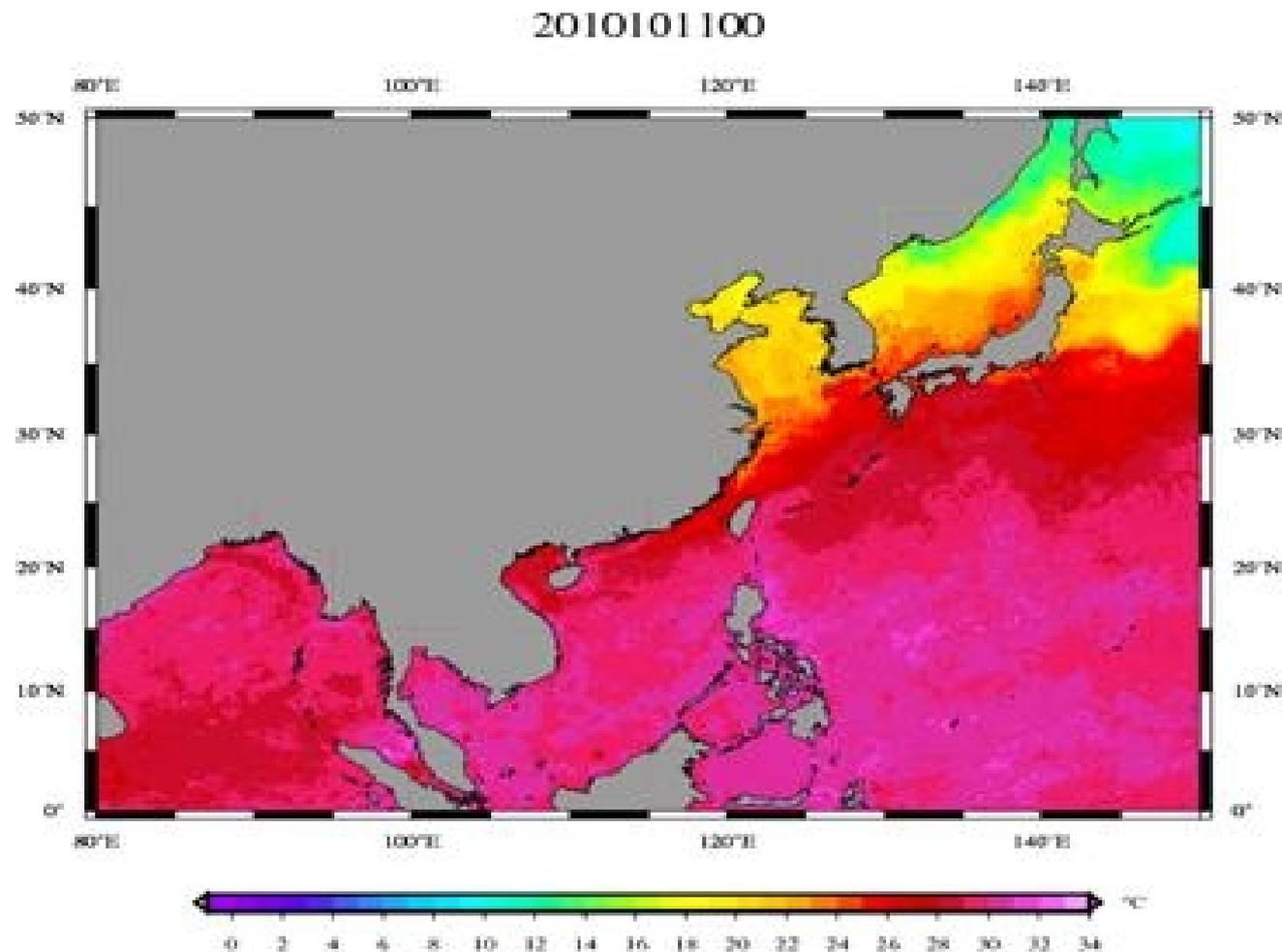




# Capacity Building of Operational Oceanography and Climate Adaptation

## Progress

The 5-7.5km resolution weather-ocean-ice-wave forecasting system was developed by The EC FP6 project for a Yellow Sea Observation, Forecasting and Information System, displaying an advancing typhoon, extreme rain, high sea and storm surge forecasts in the Region.

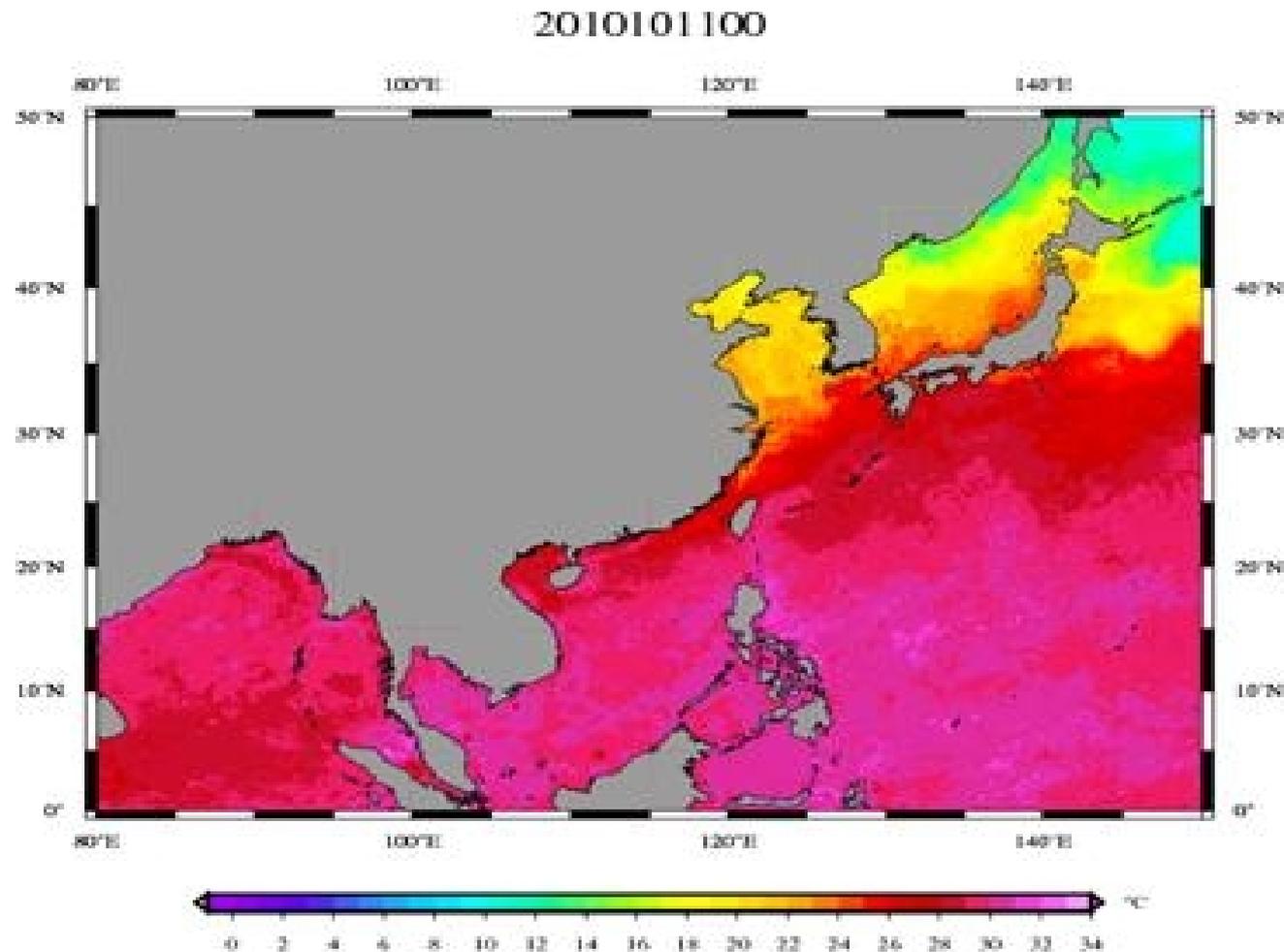




# Capacity Building of Operational Oceanography and Climate Adaptation

## Progress

Forecasting products, satellite products and in-situ observations are shared for research. User meetings in China and South Korea have greatly enhanced the awareness of operational oceanography.

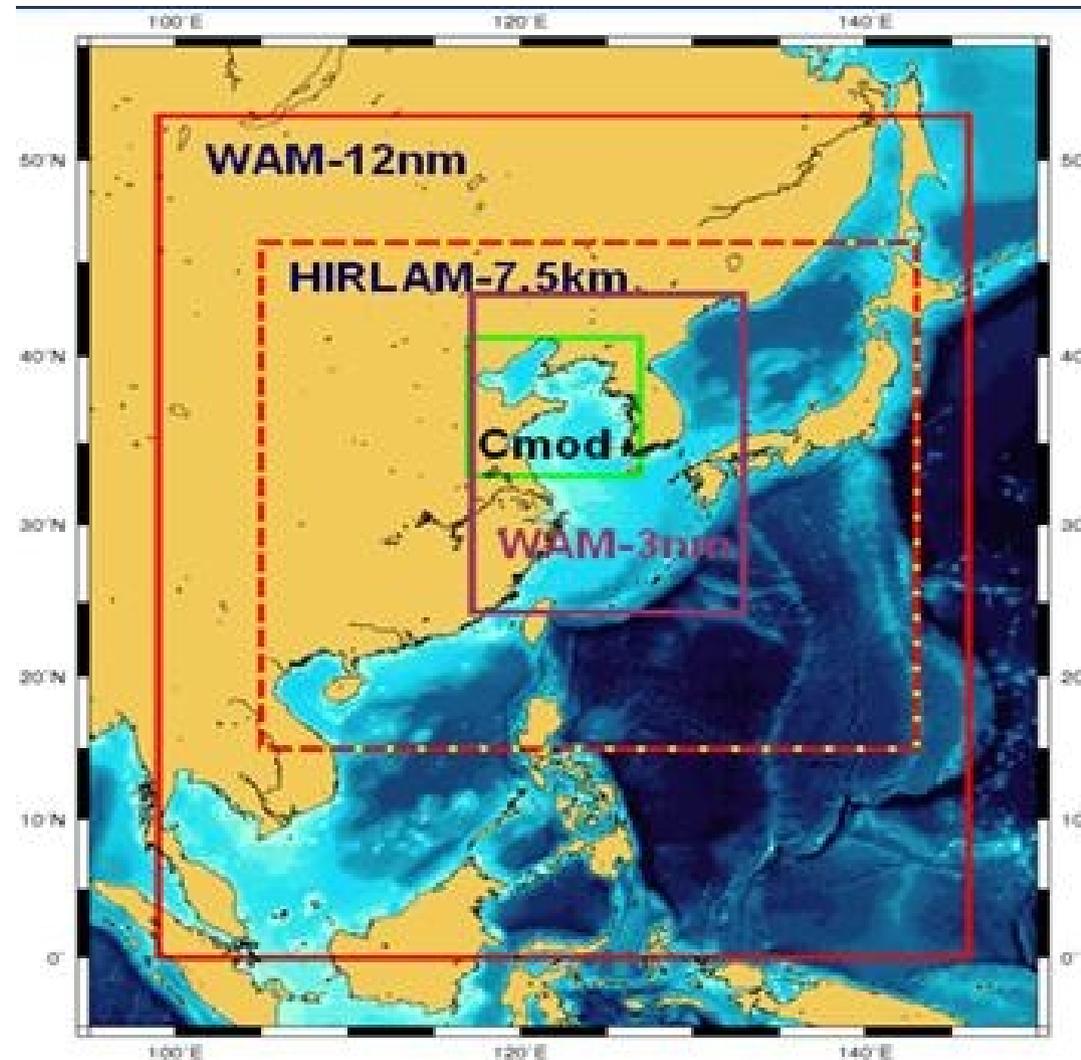




# Capacity Building of Operational Oceanography and Climate Adaptation

## Progress

The twice daily 5 km-resolution sea surface temperature gridded products prepared by optimal blending observations from seven satellites (Denmark Meteorological Institute, DMI).





# Capacity Building of Operational Oceanography and Climate Adaptation

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