

## German Meteorological Service

### Divisions:

- Climate and Environment
- Weather Forecasting
- Technical Infrastructure and Operations
- Research and Development
- Personnel and Business Management

### Operational Meteorological Service:

- Headquarter in Offenbach/Main & regional offices in Hamburg, Potsdam, Leipzig, Essen, Stuttgart, and Munich
- 6 regional climate offices (consultancy services concerning climate and environment)
- 5 advisory centres for aviation

## Governmental Tasks

- Meeting meteorological requirements arising from all areas of economy and society in Germany
- Provision of meteorological services (such as forecasts)
- Meteorological safeguarding of aviation and shipping
- Issuing of official weather warnings
- Short and long-term recording, monitoring, and evaluation of meteorological processes in the atmosphere, its structure and composition
- Recording of interactions between atmosphere and other environmental spheres
- Monitoring of atmosphere for radioactive trace elements and forecasting of their dissemination
- Operation of necessary measuring and observation systems
- Provision, storage, and documentation of meteorological data and products

## International cooperation



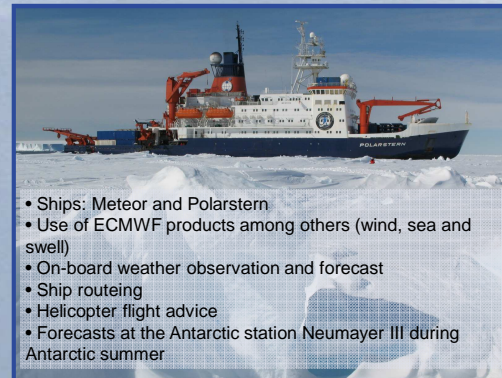
## Marine Meteorological Service



## Marine Weather Forecasts

- Forecasts for German Bight and certain areas of the Baltic Sea, as well as for parts of the Mediterranean Sea, Biscay and Canary Islands
- Forecasting wind, significant weather (thunder storms, gusts, fog,...), sea/swell, and ice
- Issuing hurricane warnings
- Broadcasted via radio, internet, fax
- Cooperation with German Maritime and Hydrographic Agency (BSH; wind forecasts in case of storm surges)
- Worldwide ship routing

## Ship Routeing & duty on board



- Ships: Meteor and Polarstern
- Use of ECMWF products among others (wind, sea and swell)
- On-board weather observation and forecast
- Ship routing
- Helicopter flight advice
- Forecasts at the Antarctic station Neumayer III during Antarctic summer

## Wave Models

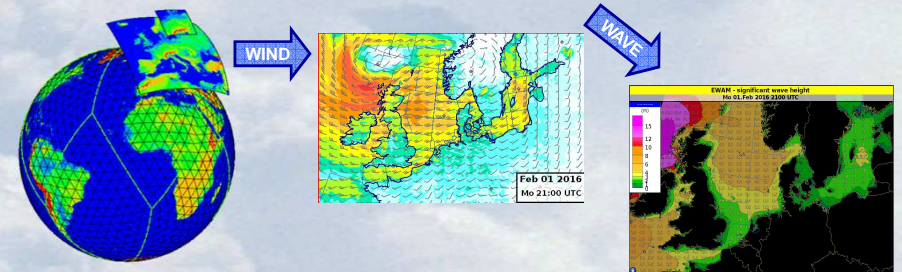
- Sea wave modelling as integral part of the numerical weather prediction system
- Developed and integrated in operational forecast system in close cooperation with research centre HZG (Helmholtz-Zentrum Geesthacht)
- Three models: **GWAM** (Global Wave Model), **EWAM** (European Wave Model), and **CWAM** (Coastal Wave Model) driven by Cosmo-EU (not yet operational)

### GWAM:

- Sector: 90°N-90°S
- Spatial resolution: 0.25° x 0.25°
- 30 frequencies
- 36 directions
- For 174h, 1-hrly
- 0 and 12 UTC
- Wind data from ICON
- Depth distribution from ECMWF

### EWAM:

- Sector: 30°N-66°N; 10.5°W-42.0°E
- Spatial resolution: 0.05° x 0.10°
- 30 frequencies
- 36 directions
- For 78h, 1-hrly
- 0 and 12 UTC
- Wind data from Cosmo-EU
- Depth distribution from topography of BSH current model



Numerical model => computation of wind field + ice distribution from surface temperature (assumed as constant) => wave model data: significant wave height, frequency, as well as direction of wind sea and swell

## Use of ECMWF-Products

<p><b>EPS wavegram:</b></p> <ul style="list-style-type: none"> <li>Sign. wave height</li> <li>Mean wave direction</li> </ul>	<p><b>Tropical Cyclone Activity:</b></p> <ul style="list-style-type: none"> <li>Strike probability</li> <li>Cyclone tracks</li> </ul>	<p><b>Sea state chart:</b></p> <ul style="list-style-type: none"> <li>trop. cyclones are added between May and November</li> </ul>	<p><b>NWP-Layer in NinJo e.g.:</b></p> <ul style="list-style-type: none"> <li>Sign. wave height</li> <li>Mean wind</li> <li>Gusts</li> </ul>
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