Ice conditions for the design portal for offshore wind turbines

Maria Tikanmäki
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Benefits of the portal

- All the data and models integrated into the same tool
- Speed-up the early design process
- Provides reliable input data for investment calculations
- Data of environmental conditions, structural models and loads can be further analyzed in other tools and applications when doing the final design
Ice condition data

- FMI has produced ice charts for winter navigation over a hundred years
- These charts are now used for offshore wind turbine design
  - Digitized from 1980-2006 and digital from 2007-2017
- Includes knowledge about ice thicknesses and types
Design parameters

• Site-specific design parameters calculated from the GIS data
  • 50-year maximum ice thickness
  • Amount of days of ice in each thickness class
  • Drifting or landfast ice
  • Ice ridges etc.
• Included in the ice load design portal for offshore wind turbines
• Unique database for design

Maximum degree of ridging (0-5) at the site
Conclusions

- Historical ice charts are a valuable and unique source for offshore structure design
- Ice chart data is processed to design parameters
- The dataset can be utilized also in other applications
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