



Rijkswaterstaat
Ministry of Infrastructure
and Water Management



Digital tools to optimize sailing at low water levels

CCNR – workshop ‘low water and the effects on Rhine navigation’

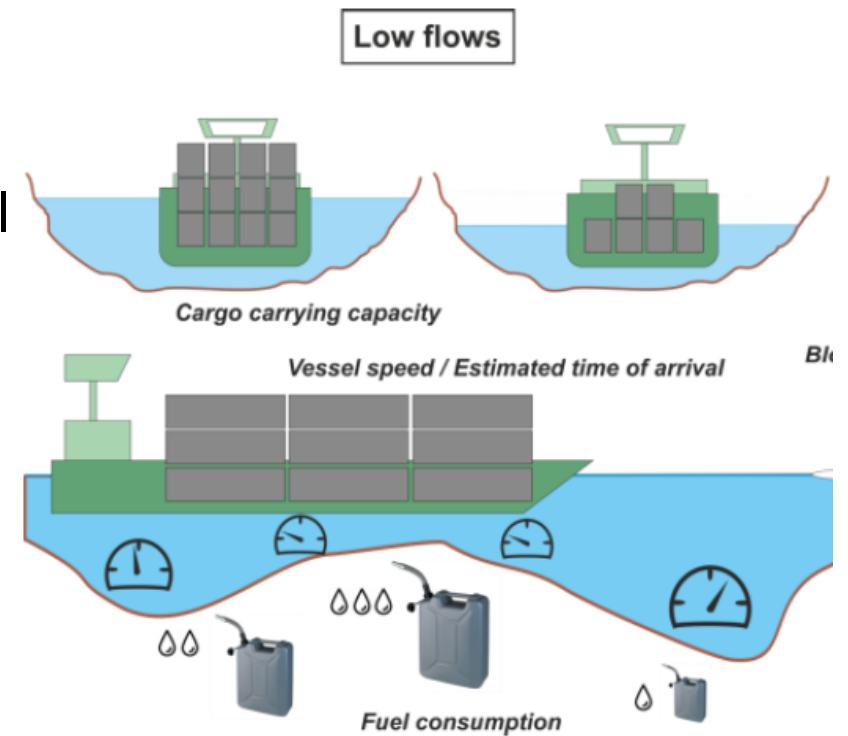
Michael Schreuder
26th november 2019

Source: <https://www.scheepvaartkrant.nl/nieuws/ccr-voorziet-vaker-laagwater-op-rijn>

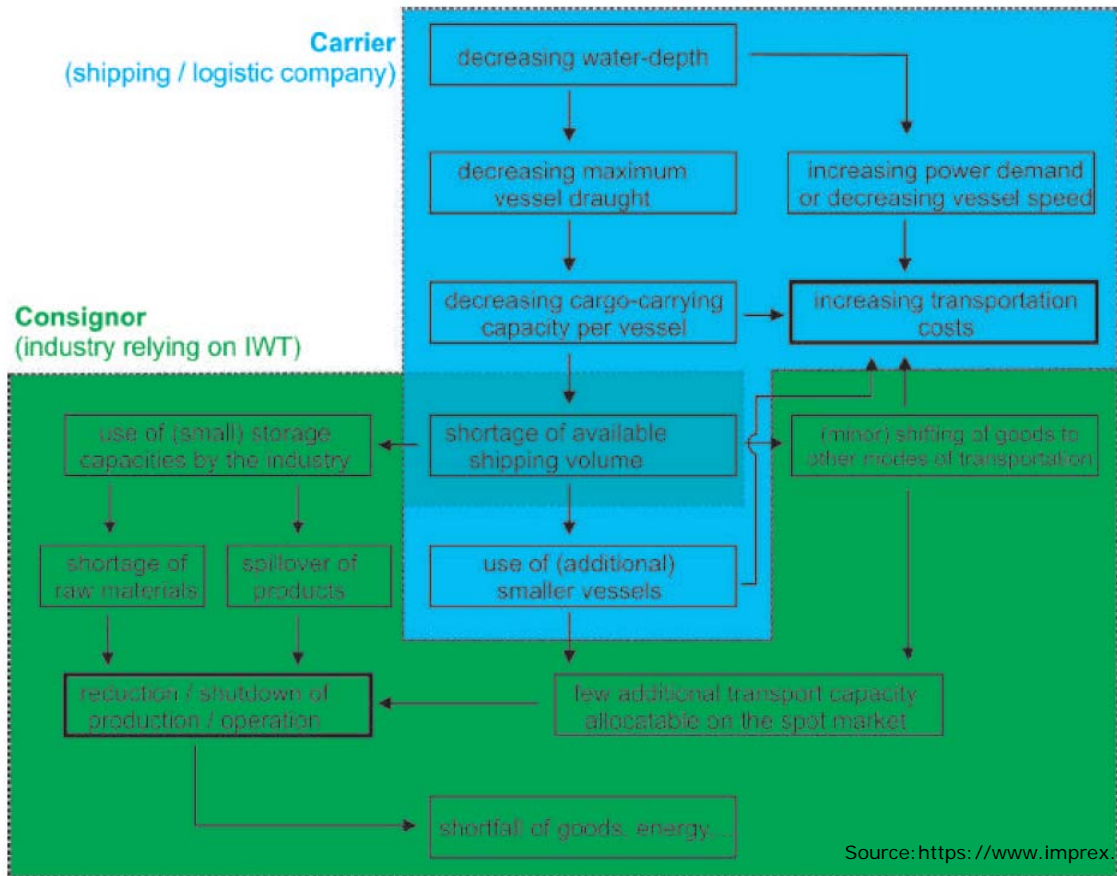


The impact of low water on IWT

- Effects safety
- Increases energy consumption and travel times
- Limit maximum cargo-carrying capacity
- Effects efficiency – fleet planning
- Affects stock management



Source: <https://www.imprex.eu/system/files/generated/files/resource/d9-3-potecobenefit-navigation-v1-0.pdf>

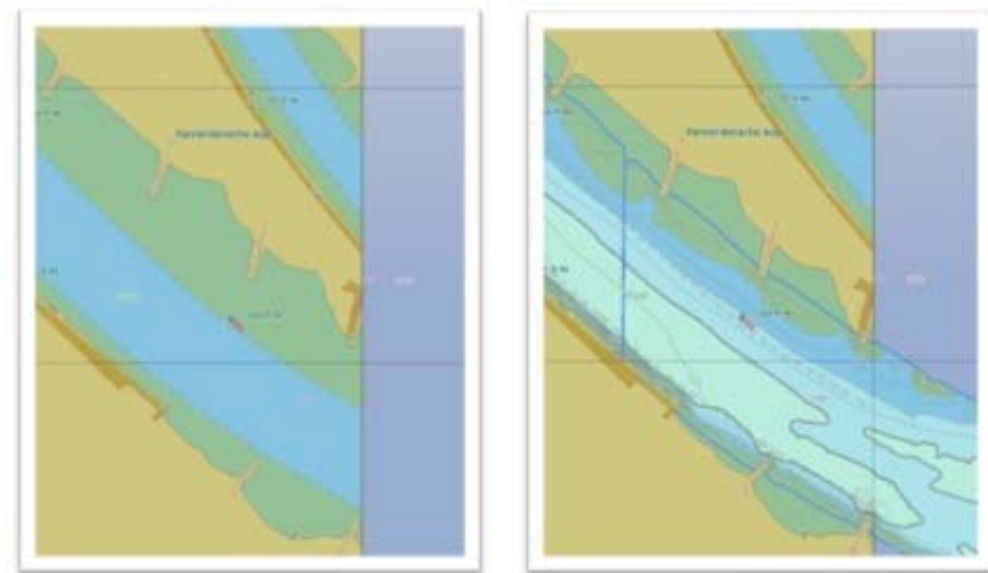




'Operational 'short' term information'

Fairway information from point of origin to point of destination

- Geography of the navigation area
- Real time water depth
- Short term (3 to 6 days) predicted water levels and water depth
- (Predicted) Traffic flows and ETA calculation



Source: <https://ienc-kennisportaal.nl/veelgestelde-vragen/>



'Strategic long-term information'

Pre-trip planning information – longer lead times

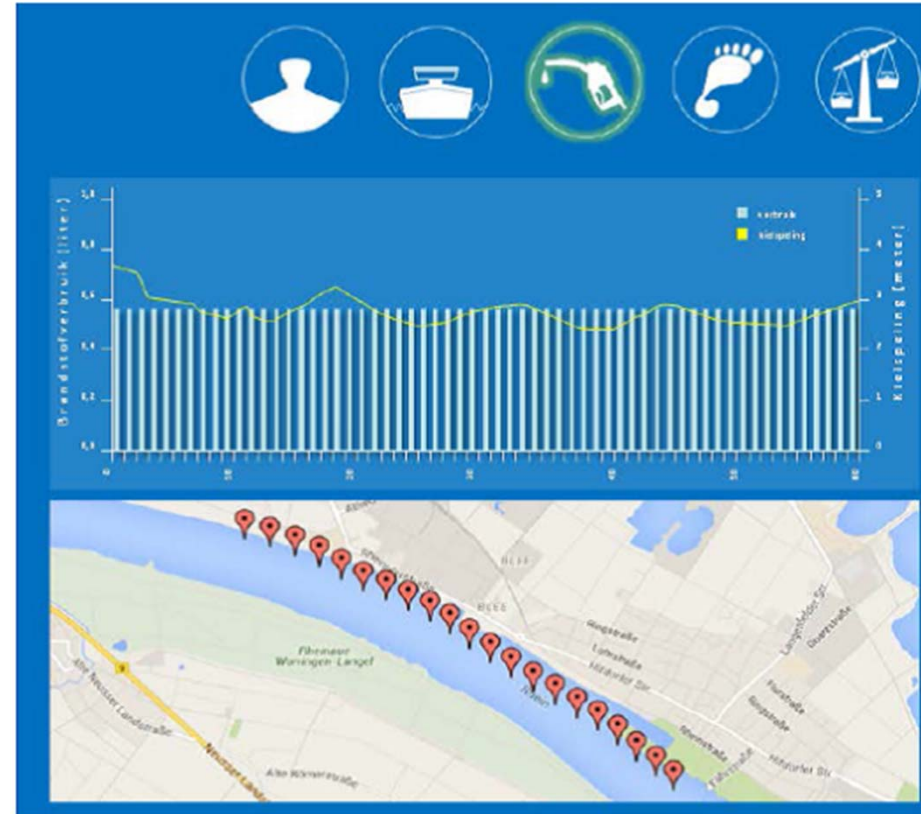
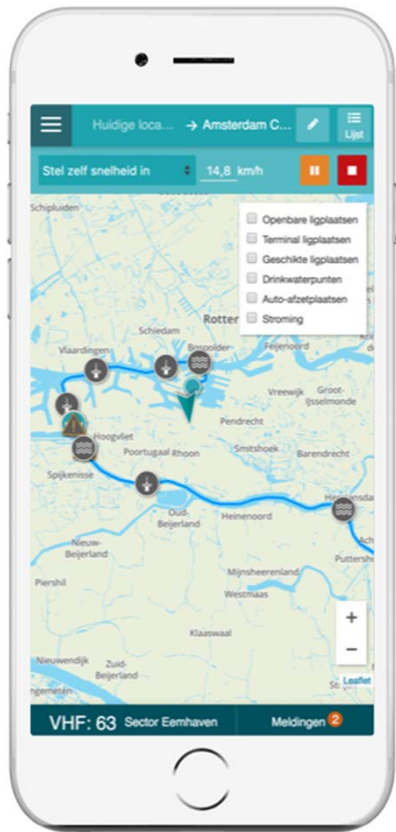
- Predicted travel times
- Future water levels and water depth



Source: <http://www.inlandnavigation.eu/news/infrastructure/call-to-coordinators-and-commission-to-give-high-consideration-to-inland-waterways-and-ports/>



Available Digital Tools



Sources: <https://riverguide.eu/> | <https://waterinfo.nl> | <https://www.deltares.nl/nl/nieuws/covadem-binnenvaart-zet-realtime-data-om-in-meerwaarde-voor-milieu/>



Current limitations

- Availability of real time data
- Lead time of predictions
- Different service providers
- Integration on information



Developments

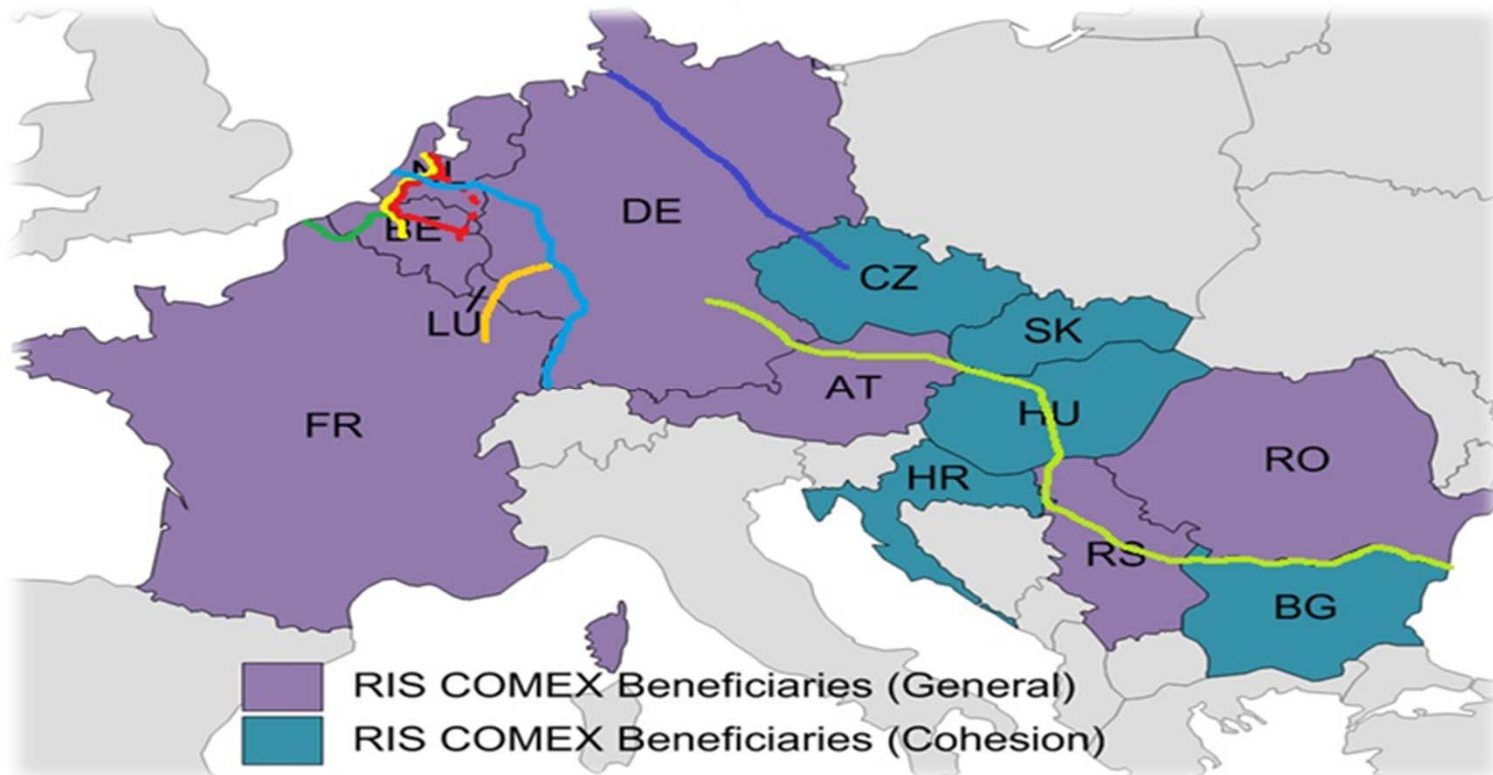
- Improved water level forecasting – up to 10 days ahead
- Least measured depths – more than one location
- Imprex: European study on improving weather forecast models
- More depth information in ENC's



Source: <https://www.imprex.eu>



Corridor management



Corridor Management aims at improving and linking existing RIS services on a route or network in order to supply RIS on a corridor. Source: <https://www.riscomex.eu>



Future challenges

- Modeling river bottom dynamics in predictions
- Increased uncertainty of long term predictions
- Standardization of input and output
- Integration of information



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Thank you for your attention



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