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Flood Forecasting in Wales: Challenges and Solutions

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With steep, fast-responding river catchments, exposed coastal reaches with large tidal ranges and large population densities in some of the most at-risk areas; flood forecasting in Wales presents many varied challenges. Utilising advances in computing power and learning from best practice within the United Kingdom and abroad have seen significant improvements in recent years - however, many challenges still remain. Developments in computing and increased processing power comes with a significant price tag; greater numbers of data sources and ensemble feeds brings a better understanding of uncertainty but the wealth of data needs careful management to ensure a clear message of risk is disseminated; new modelling techniques utilise better and faster computation, but lack the history of record and experience gained from the continued use of more established forecasting models.

As a flood forecasting team we work to develop coastal and fluvial forecasting models, set them up for operational use and manage the duty role that runs the models in real time. An overview of our current operational flood forecasting system will be presented, along with a discussion on some of the solutions we have in place to address the challenges we face.

These include:

• real-time updating of fluvial models
• rainfall forecasting verification
• ensemble forecast data
• longer range forecast data
• contingency models
• offshore to nearshore wave transformation
• calculation of wave overtopping