

The use of MÉRA for the Development of a Bathing Water Prediction System in Ireland

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Topics Covered

- Overview of the EU SWIM Project
- Role of MÉRA (& HARMONIE) in Bathing Water Quality Modeling
- Example of Model Development & Implementation

Project Motivation

- European Bathing Water Directive requires the implementation of *early warning systems for bathing waters* which are subject to short-term pollution events.
- Coastal water quality prediction models and alert systems are being developed which aim to provide *short-term forecasts of bathing water*.
- These forecasts are based on the (modeled) relationship between faecal indicator bacteria and *multiple environmental variables*.





Water Quality History Example @ Newcastle Beach



Water Quality History Example @ Newcastle Beach



Most Operational Forecasting Systems used Worldwide are Data-Driven Statistical Models



Statistical Models for Bathing Water Prediction are *Data Hungry*



MÉRA Data





MÉRA Data





MÉRA Grid Points @ Newcastle Beach

- Many MÉRA grid points within a target catchment area
- Provides high spatial & temporal resolution (far exceeding what could be gathered by gauges)



1. Model Development





1. Model Development





2. Model Implementation



2. Model Implementation

Today is Thursday, March 21st 2019 Below Predictions are for Sunday, March 17th 2019

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Ballyholme@01:00 - General Status -	Ballywalter@01:00 - General Status -	Castlerock@01:00 - General Status -	Clogherhead@01:00 - General Status -	<u>Enniscrone@01:00</u> - General Status -	- Gen	<u>sbay@01:0</u> 1eral Status	<u>Newcastle@01:00</u> - General Status -	<u>Portrush@01:00</u> · General Status -	<u>Waterfoot@01:0(</u> - General Status -
General_Class POOR	General_Class GOOD	General_Class SUPFICIENT	General_Class EXCELLENT	General_Class EXCELLENT	Gener EXCI	ral_Class ELLENT	General_Class POOR	General_Class GOOD	General_Class <mark>POOR</mark>
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IE_Class <mark>POOR</mark> IE Bin	IE_Class GOOD IE Bin	IE_Class SUPPICIENT IE Bin	IE_Class EXCELLENT IE Bin	IE_Class EXCELLENT IE Bin	IE_Cl EXCI IE Bi	lass <mark>ELLENT</mark> in	IE_Class <mark>POOR</mark> IE Bin	E_Class <mark>300D</mark> E Bin	IE_Class POOR IE Bin
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3. Model Refinement



3. Model Refinement (Next Steps)







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