USACE Model Validation Tool

Interactive Model Evaluation and Diagnostics System (IMEDS)

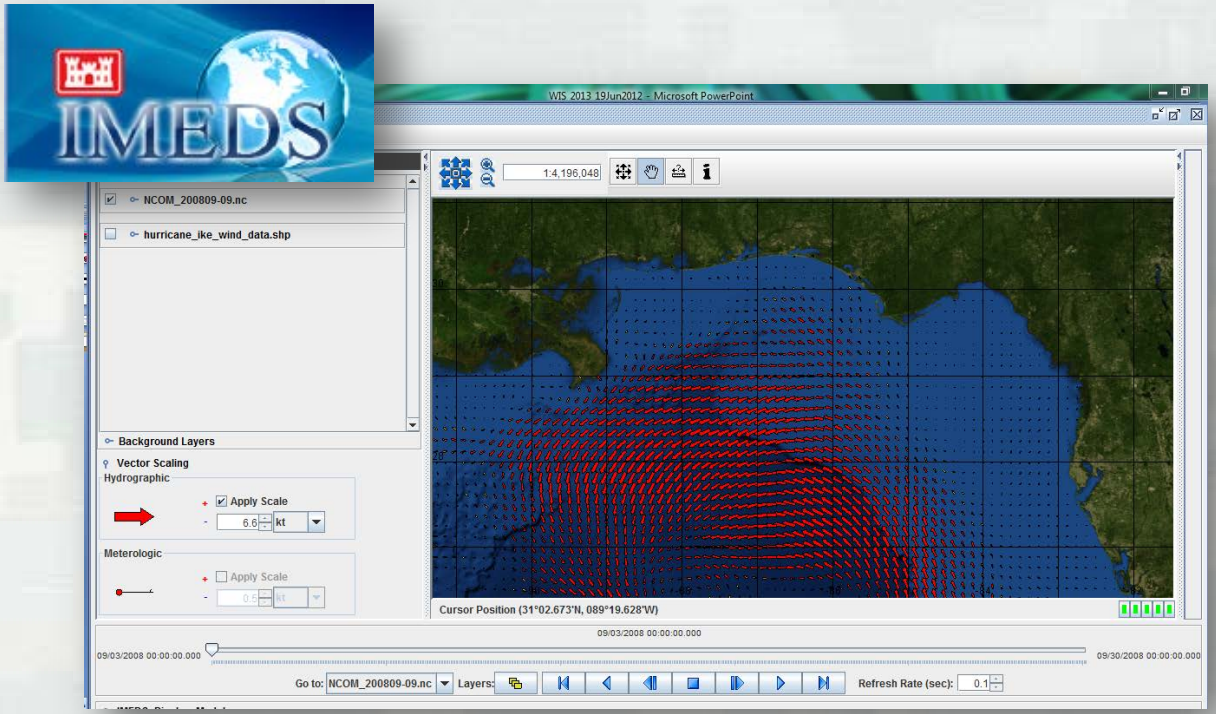
National Oceanographic Partnership Program

Objectives

- Robust model evaluation toolbox
- Link observations to model output
- Standardized metrics and performance evaluation
- Professional user interface

Parameters

- Winds
- Waves
- Water levels
- Currents



Statistical Analyses

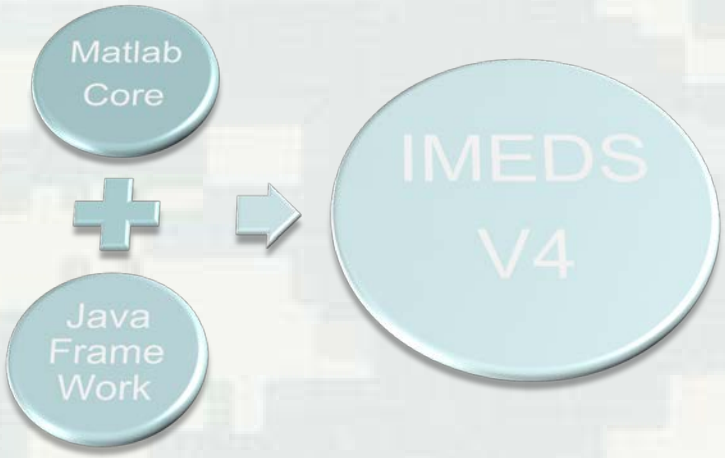
- Temporal correlation
- Quantile-Quantile
- Peaks over threshold
- Satellite altimeter track
- SIO WaveEval

IMEDS Update

(INTERACTIVE MODEL EVALUATION AND DIAGNOSTICS SYSTEM)

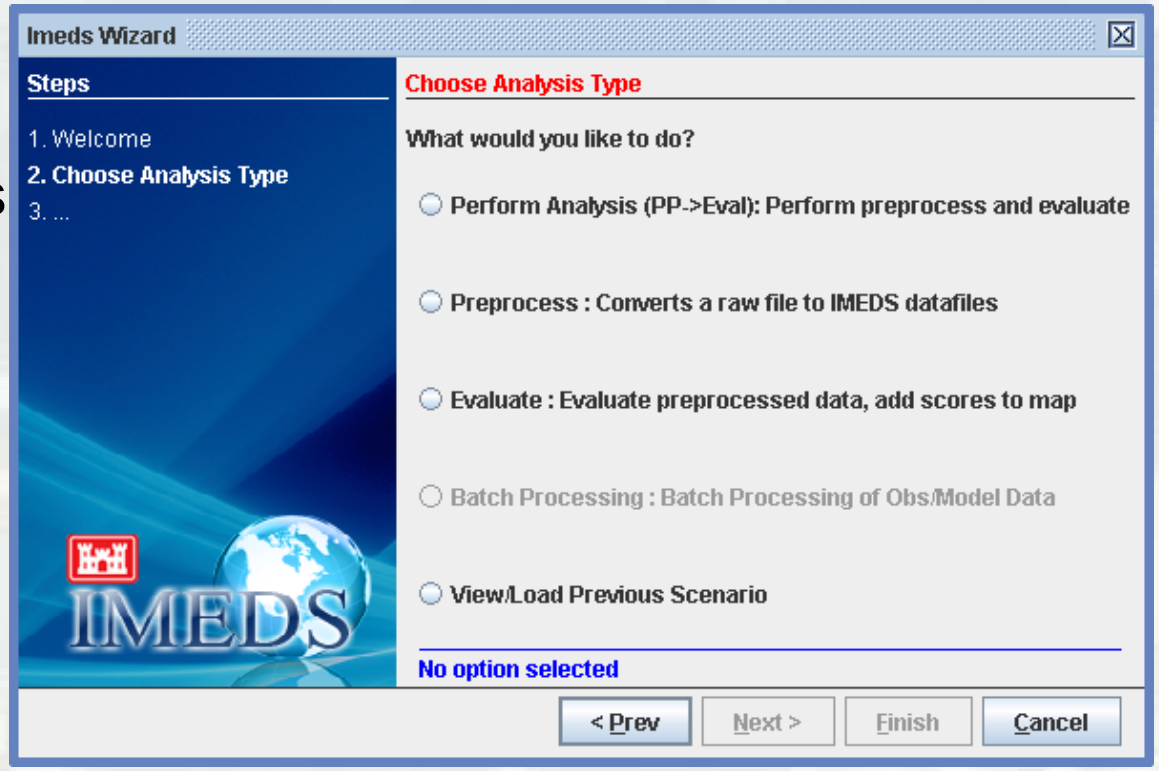
- Based on original prototype developed in Matlab
  - Core Matlab analysis components compiled to java
  - Integrated with ASA's mapping framework

- Ability to analyze multiple data types
  - Wind
  - Wave
  - Water-level

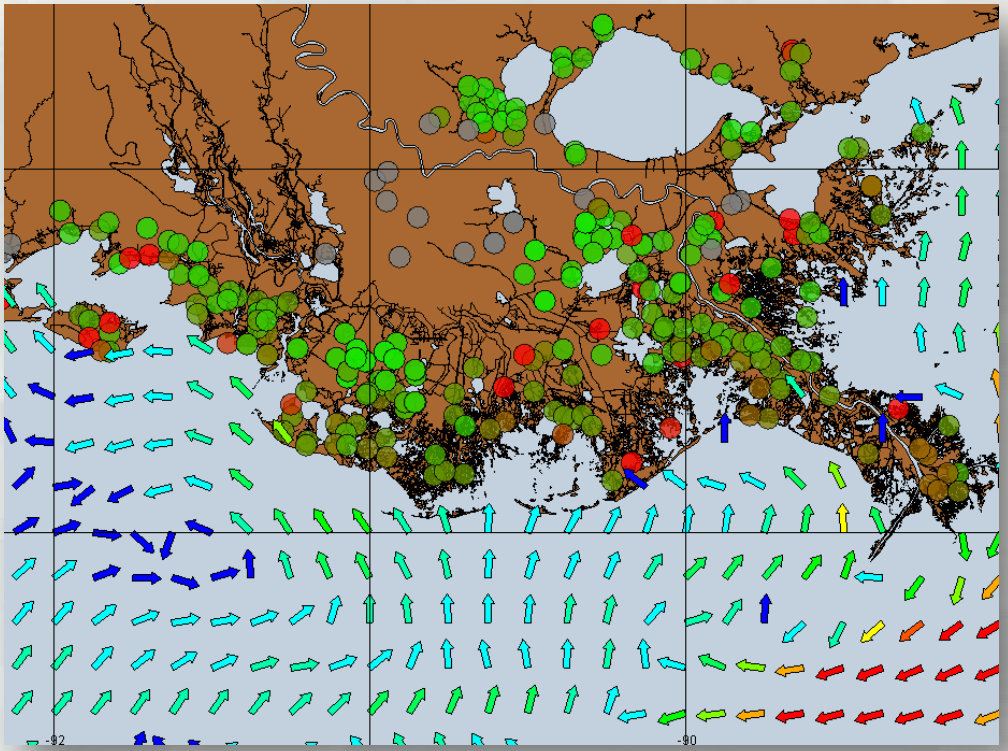


IMEDS Wizard

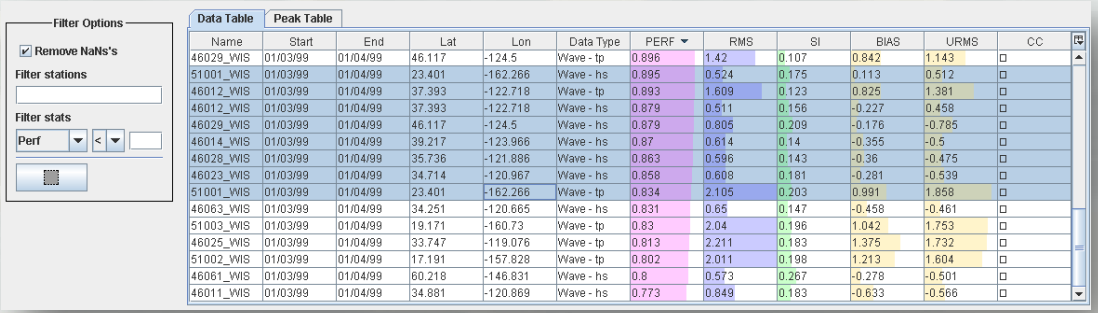
- Displays on IMEDS startup
- Easy access to core IMEDS functionality
- Save IMEDS Scenario to recall processing applied
- Wizard act as "Checklist" for analysis session



- IMEDS Map Interface
  - High resolution base map
  - Performance colored stations
  - Table to Map Interaction
  - Gridded NETCDF support

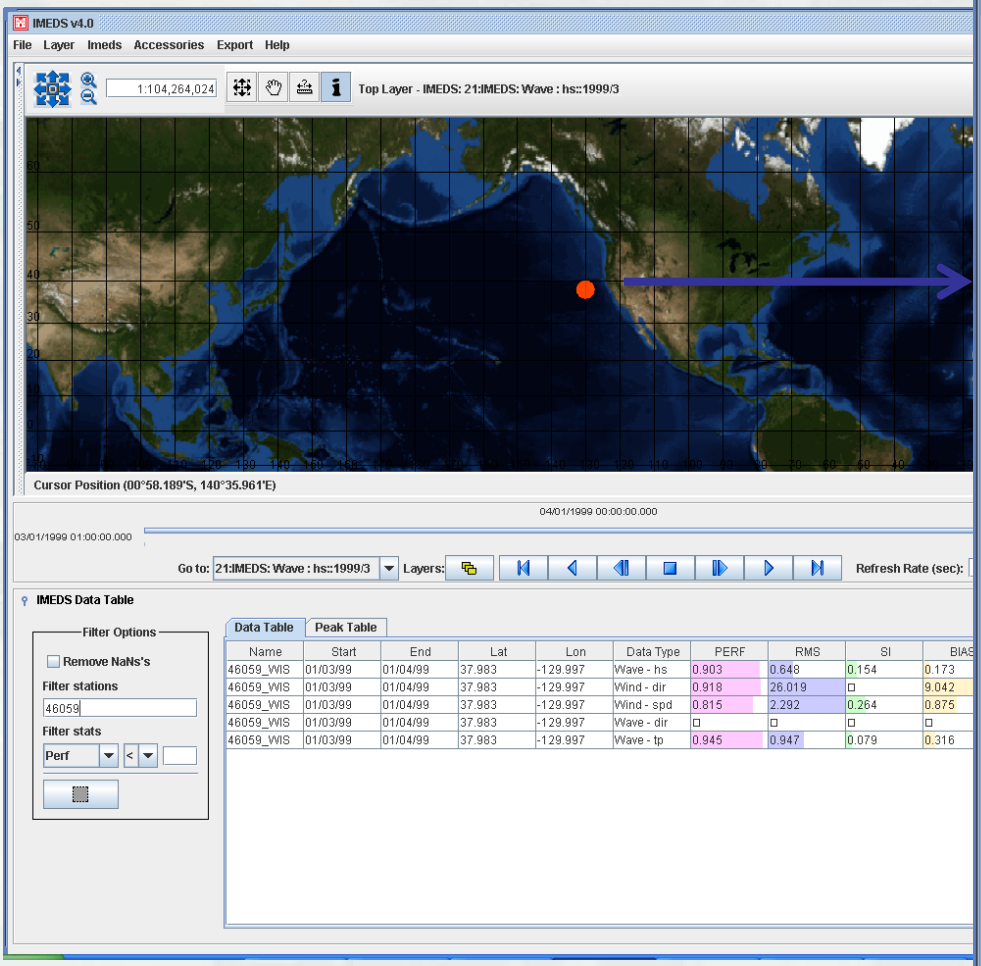


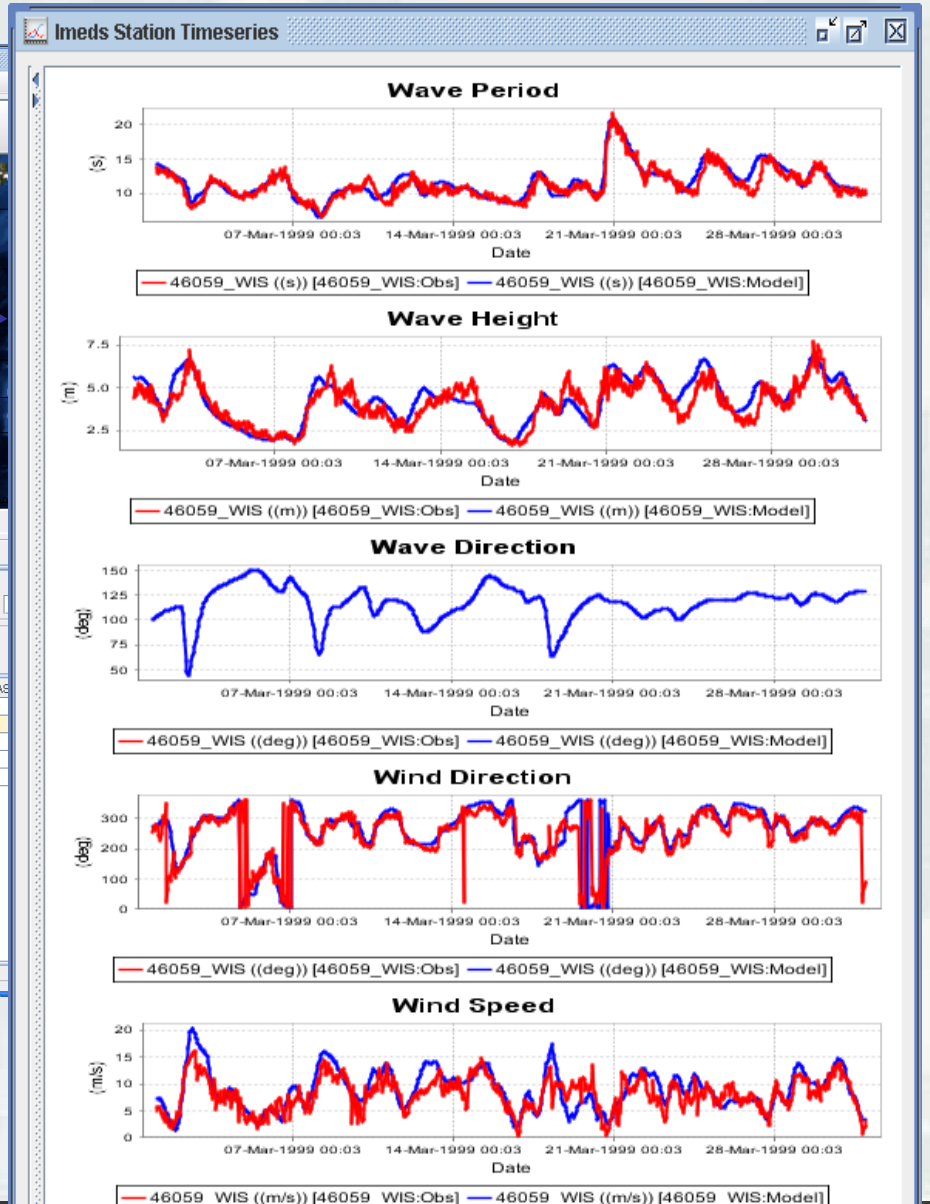
- IMEDS Data Tables
  - Performance colored bars
  - Map/table filter capability
  - Right click export option
  - Performance plots



Name	Start	End	Lat	Lon	Data Type	PERF	RMS	SI	BIAS	URMS	CC
46029_WIS	01/03/99	01/04/99	46.117	-124.5	Wave - tp	0.896	1.42	0.107	0.842	1.143	
51001_WIS	01/03/99	01/04/99	23.401	-162.266	Wave - hs	0.895	0.524	0.175	0.113	0.512	
46012_WIS	01/03/99	01/04/99	37.393	-122.718	Wave - tp	0.893	1.609	0.123	0.825	1.381	
46012_WIS	01/03/99	01/04/99	37.393	-122.718	Wave - hs	0.879	0.511	0.156	-0.227	0.458	
46029_WIS	01/03/99	01/04/99	46.117	-124.5	Wave - hs	0.879	0.805	0.209	-0.176	-0.785	
46014_WIS	01/03/99	01/04/99	39.217	-123.966	Wave - hs	0.87	0.614	0.14	-0.355	-0.5	
46028_WIS	01/03/99	01/04/99	35.736	-121.886	Wave - hs	0.863	0.596	0.143	-0.36	-0.475	
46023_WIS	01/03/99	01/04/99	34.714	-120.967	Wave - hs	0.858	0.608	0.181	-0.281	-0.539	
51001_WIS	01/03/99	01/04/99	23.401	-162.266	Wave - tp	0.834	2.105	0.203	0.991	1.858	
46063_WIS	01/03/99	01/04/99	34.251	-120.665	Wave - hs	0.831	0.65	0.147	-0.458	-0.461	
51003_WIS	01/03/99	01/04/99	19.171	-160.73	Wave - tp	0.83	2.04	0.196	1.042	1.753	
46025_WIS	01/03/99	01/04/99	33.747	-119.076	Wave - tp	0.813	2.211	0.183	1.375	1.732	
51002_WIS	01/03/99	01/04/99	17.191	-157.828	Wave - tp	0.802	2.011	0.198	1.213	1.604	
46061_WIS	01/03/99	01/04/99	60.218	-146.831	Wave - hs	0.8	0.573	0.267	-0.278	-0.501	
46011_WIS	01/03/99	01/04/99	34.881	-120.869	Wave - hs	0.773	0.849	0.183	-0.633	-0.566	

Stacked Time Series





IMEDS Batch Processor

- Ability to select and process a number of data files in a batch mode
  - 1:1 – match single model/obs data files
  - 1:Many – match select obs to many model output files

IMEDS Benefits to Waves NOPP

- Built-in formatter for WaveWatch III data
- Evaluate model performance against buoy data
- Standardized methods and metrics
- Batch process capability for long hindcasts
- Multi-model comparisons
- Easy installation package for Windows machines
- Will be delivered to NCEP early 2013