Model Output Evaluation and Data Dissemination for Seasonal and Shorter Time Scales: **NMME and HIWPP**

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High Impact Weather Prediction Project

The goal of HIWPP is to improve time zero to two-week weather prediction

- Focus on improving forecasts of severe weather events
- Initiated under NOAA Hurricane Sandy Supplemental funding

Project components:

- **Hydrostatic modeling** Improve hydrostatic-scale medium-range forecast capability as a benchmark for further model advances.
- **Non-hydrostatic modeling** Testing and evaluation of global non-hydrostatic dynamical cores under development at EMC, GFDL, ESRL, NPS/NRL and NCAR.
- **Moving hurricane nest** Improve hurricane predictions with development of a high-resolution moving nested HWRF model.
- **NMME expansion** Evaluate prediction capabilities of high-impact weather extremes out to several months.
- **Test program** Develop advanced capabilities for testing and evaluating global numerical weather prediction systems.

High Impact Weather Prediction Project

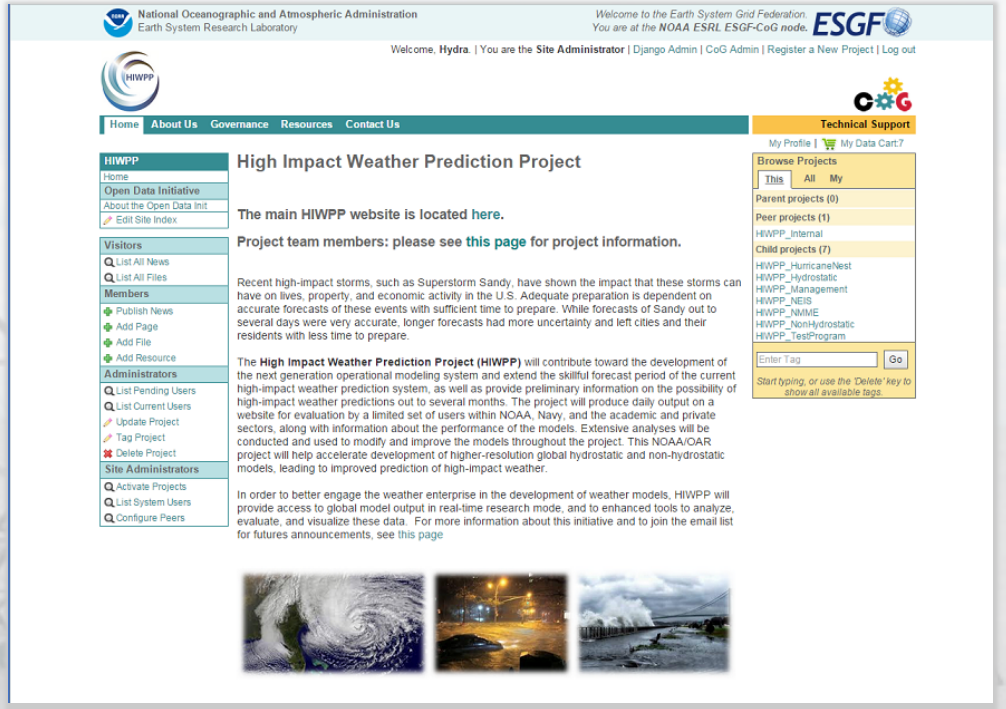
CoG support for HIWPP

- CoG hosts network of HIWPP project websites, one for each sub-project
- Model intercomparison results posted and discussed using the wiki
- Search configured for selected HIWPP data

Special HIWPP requirements

Host projects on server fully compliant with federal and NOAA website requirements

- OpenID to meet authentication requirements
- Password strength evaluation
- Split off and federate a NOAA CoG installation for an acceptable URL
- Section 508 compliance



NMME North American Multi-Model Ensemble

The goal of NMME is to improve intra-seasonal operational weather prediction

- Uses leading North American climate models: CCCMA, GFDL, NASA, NCAR, NOAA
- Supported by NOAA/CPO with contributions from DOE, NASA and NSF

Project objectives:

- **Continued real-time forecasts** which incorporate updated model products.
- **Coordinated predictability research** that identifies the benefit of the multi-model approach and guides model development and applications.
- **Development of an intra-seasonal protocol** for model evaluation.
- **Enhanced data distribution** to facilitate use of NMME operational and model evaluation data.

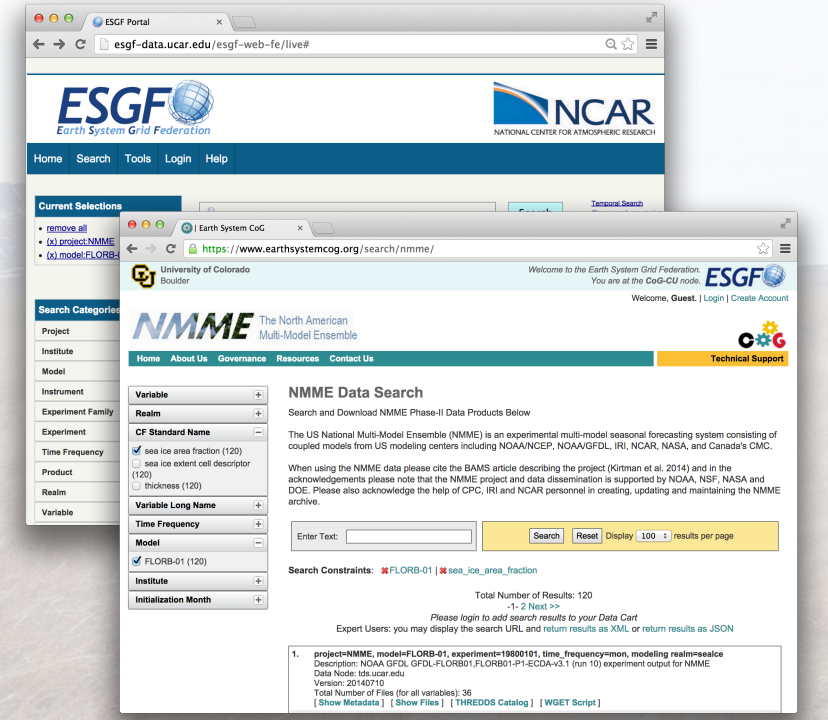
North American Multi-Model Ensemble

ESGF support for NMME

- Data publication at NCAR via ESGF publishing tools
- Data discovery from ESGF Web-FE/Index node
- Data access and download via ESGF data node
- Over 300TB and 16,000 datasets total

CoG support for NMME

- CoG hosting a NMME project website
- Improved support for ensemble data
- Search access to ESGF NMME data
- Project results shared through the wiki
- NMME newsletter distribution



Data Management Highlights and Challenges

Data requirements brought consistency and challenges to providers

Project challenges…

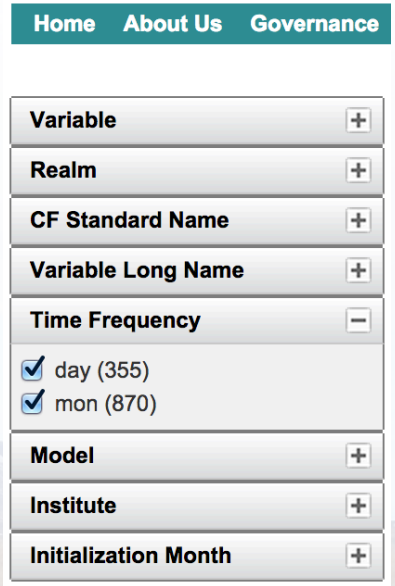
- New formats and tools for Data Providers slowed progress
- Data transfer processes involved manual operation
- Scaling data serving technology to meet dataset volume
- Open (ie. free) data access dependent on security infrastructure
- Tertiary storage based products not accessible via CoG and ESGF
- Non CMIP5 project and facets may dilute federated metadata

Data Management Highlights and Challenges

Data requirements brought consistency and challenges to providers

Project highlights and accomplishments

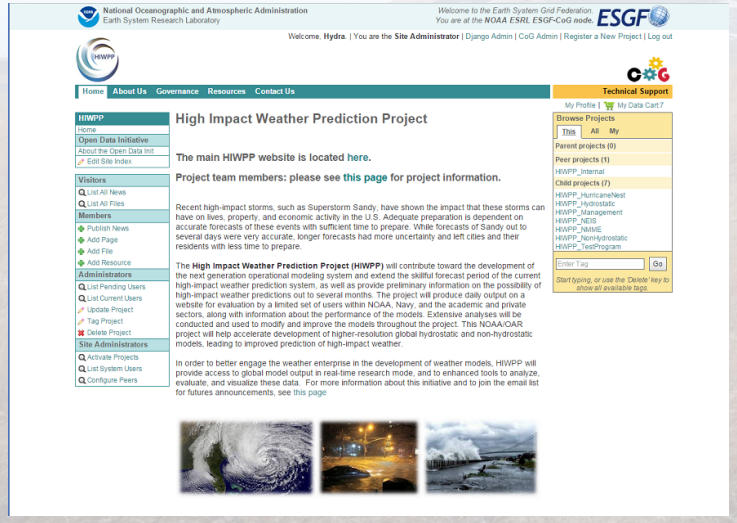
- CMIP5 style post processing and metadata generation
- Globus Transfer for reliable data movement
- NetCDF4 with compression reduced data volume
- Customizable faceted search and facet display mapping
- Multiple facet value selection simplifies download workflow
- Data discovery via federated systems increases visibility
- Centralized project documentation repository supports collaboration



Project Takeaways

Enhanced User Interface enables users with more information

- CoG project based model enables customization and improves search
- Wiki content is a powerful complement to data discovery and access
- Data movement and publication infrastructure is a challenge for new users



Future Direction

Expand data discovery, access and project services

- Complete publication of expected NMME and related HIWPP data products
- Expand project staff involvement in CoG wiki content creation
- Evaluate server side analysis capabilities (LAS, GRADS, WMS)
- Consider CoG UI based ESGF for access to NMME operational products

Thank you!

Questions?

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