

DICast[®] :

A Dynamic Integrated ForeCast System

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The DI-Cast[®] System

- *An automated point weather forecast system*
- *Provides timely, accurate, worldwide forecasts*
- *Designed to emulate the human forecast process*
- *Applicable to a variety of forecast problems*
- *Uses state-of-the-art scientific and engineering principles*
- *Requires only modest computing systems and common data sources*
- *Custom data sources can add skill*



DI Cast[®] Output and Operations

Forecast Variables

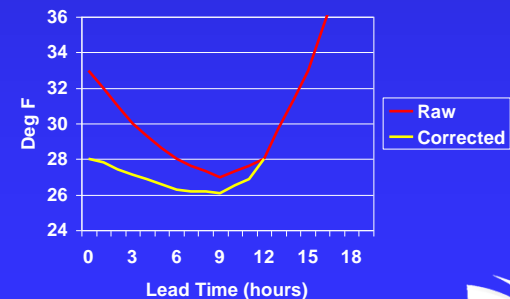
- Max/Min Temp
- Probability of Precip
- Precip Amount and Type
- Temp & Dew point
- Wind u-, v-, speed
- Cloudiness
- Prob. Of Thunder
- Prob. Of Fog
- Visibility
- Others as specified

Subsystems

- Long Term (0-16 days)
- Short Term (0-3 days)
- Near Term (0-24 hrs)

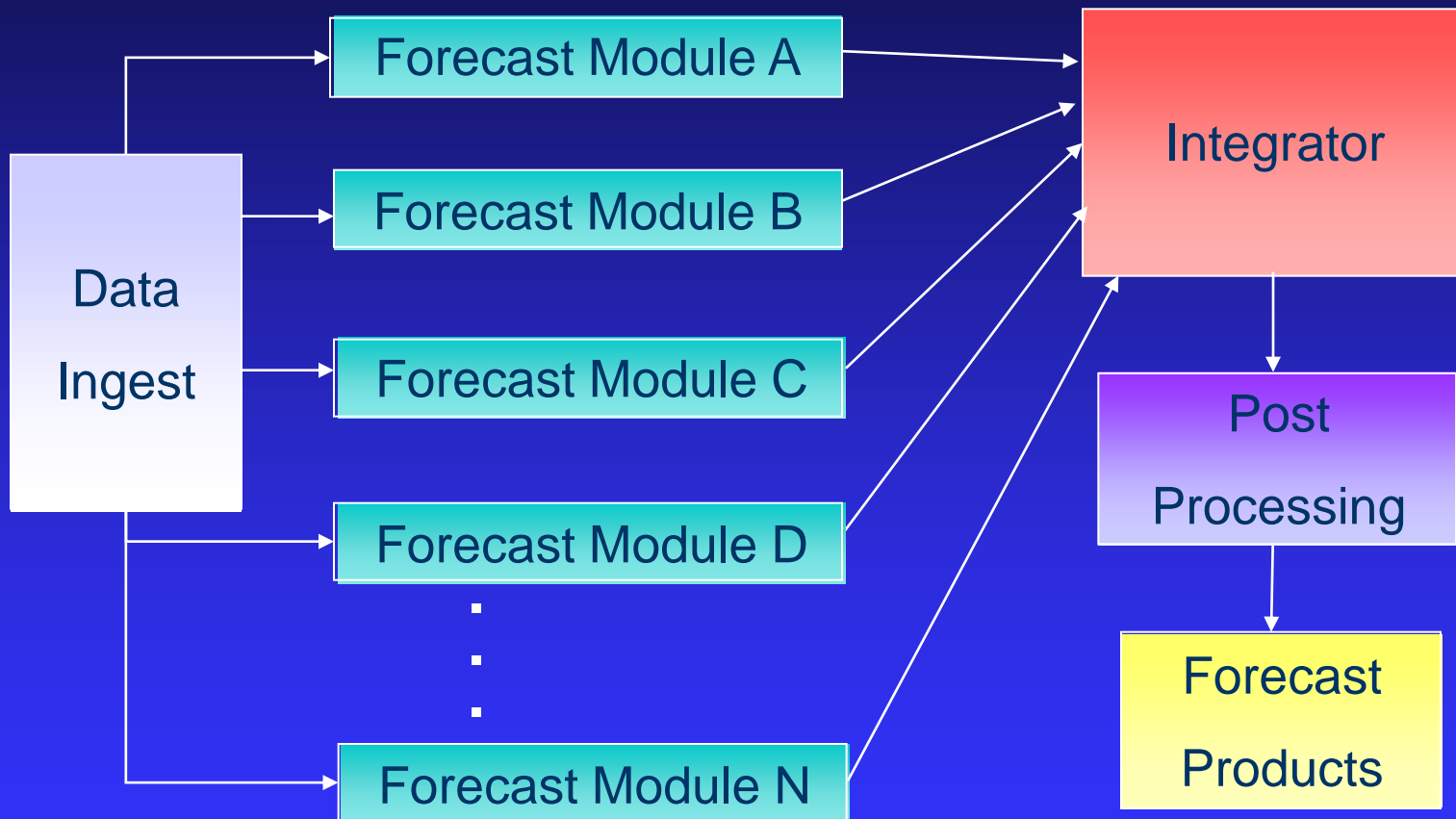
Schedule

- 1-3 hour forecast update cycle
- 15 min to hourly FEC (Forward Error Correction)

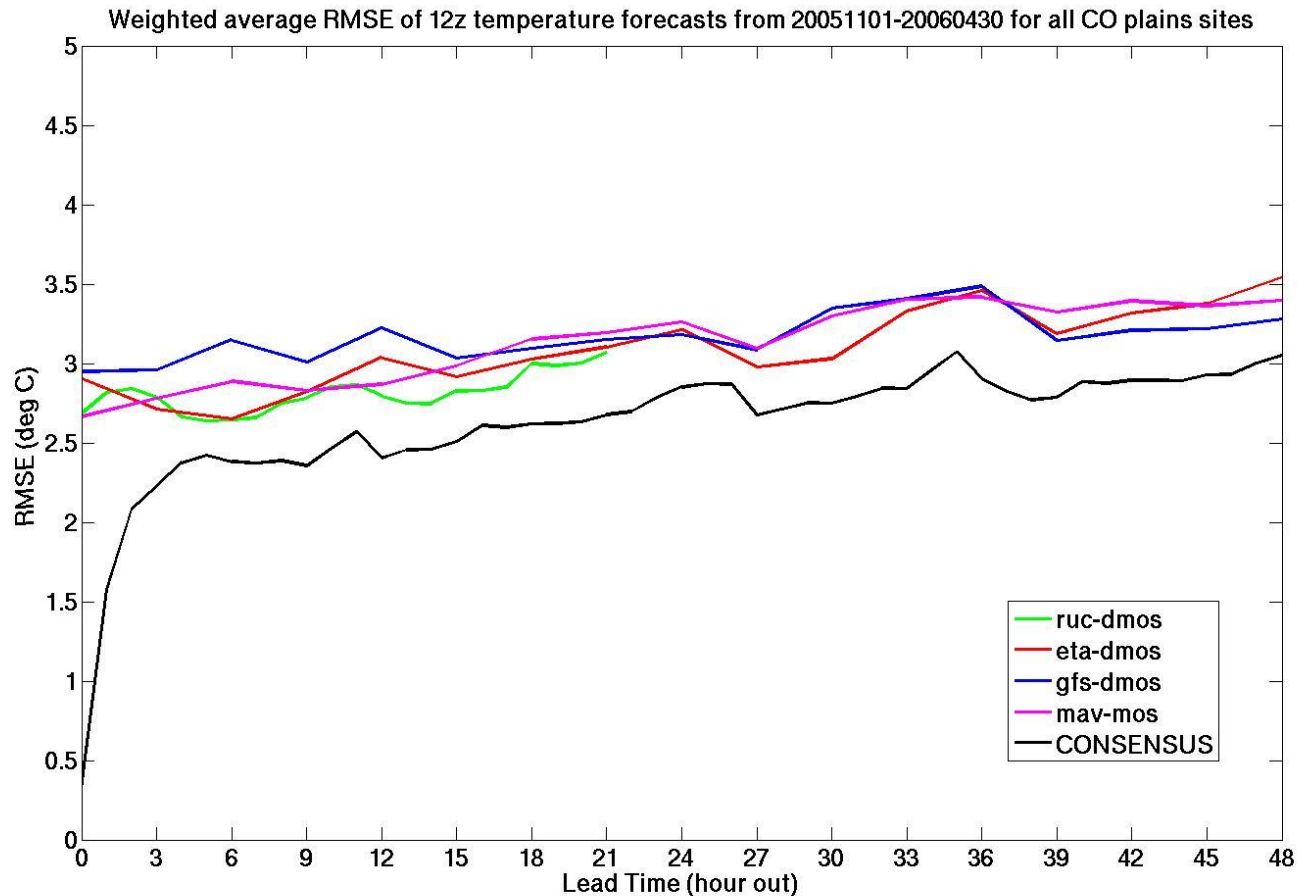


DICast[®]

Dynamic, Integrated Forecast System



Short Term Predictions (0-48 hours)



DI Cast[®] Advantages

DI Cast forecasts:

- Outperform every constituent forecast module
- Outperform human beyond 12 hours
- Are totally automated
- Are more cost effective than human generated forecasts

DI Cast is scalable

- Additional sites or NWP models easily integrated



DI²Cast[®] Improvements

Precipitation

- Radar extrapolations useful for several hours
- Improved near term forecast and current conditions for precipitation

Internationalization

- Region-Specific Mesoscale Models Incorporation

Probabilistic Forecasts

- Ensemble of inputs can be used to generate uncertainty information

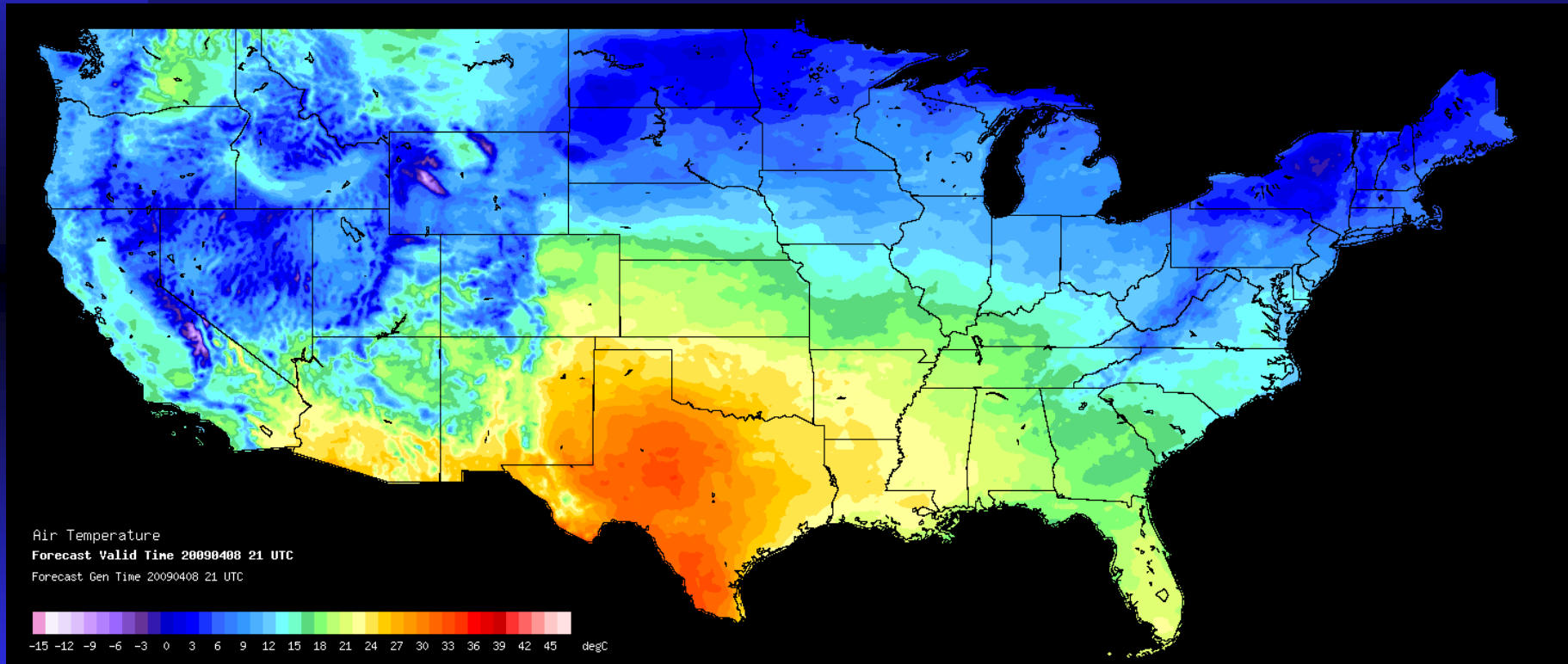


LOGICast[®]

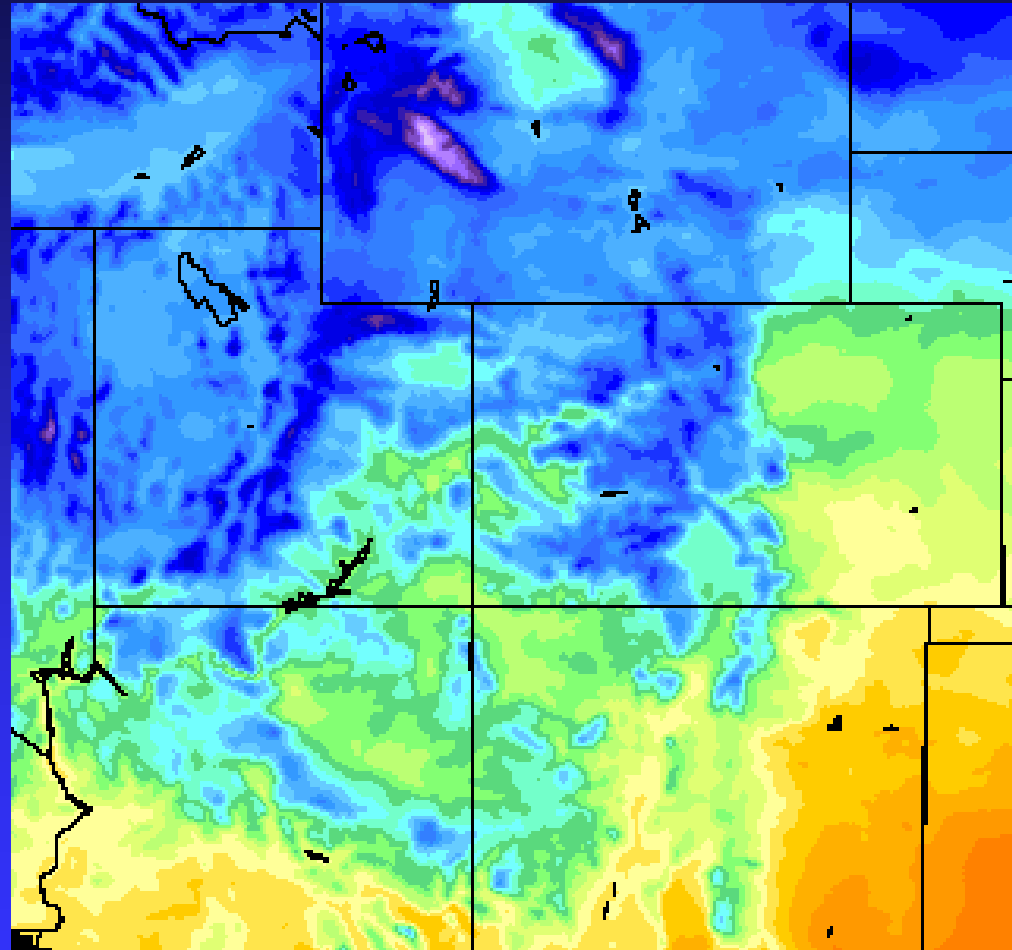
- Gridded Forecast (CONUS)
 - ◆ Based on NWP, DICAST[®], and climatological data
- Agrees with DICAST[®] at “most” observation sites
 - ◆ Trusted representative obs used in grid generation process
- Regularly-spaced in Lat-lon
 - ◆ Currently at ~4 km (1/24th degree) resolution (1 km possible)
- Generated hourly
 - ◆ Hourly resolution out to 144 hours



Example LOGICast[®] Temperature Grid



Intermountain West Temperature Grid Detail



DICast[®]/LOGICast[®] Enhancement Plans

- Further grid verification
- Improve mountainous and coastal forecasts
- Investigate 1 km grid forecasts
- Compare downscaling techniques
- Develop high resolution grid in other regions of the globe

DI Cast[®] Project Integration

Road Weather Decision Support System

- Coupled with Pavement Temperature Model and Rules of Practice

Agriculture

- Coupled with Land-Surface Model to produce Soil Moisture and Temperature Forecasts

Wind Energy

- Modified to forecast wind speeds at turbine hub heights AGL
- Coupled with advanced power conversion module to produce power forecasts

DICast[®] Commercialization

- DICast is used as an advanced weather forecast engine for several private sector weather companies including:
 - The Weather Channel
 - WSI
 - Telvent DTN
 - Global Weather Corporation
 - Vaisala

DICast[®] is a licensed technology of the University Corporation for Atmospheric Research foundation (UCARF)

