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US AIR FORCE WEATHER WEB SERVICES (AFW-WEBS)

15 November 2010

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Air Force Weather Agency**



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Overview



- **Air Force Weather Agency (AFWA)**
 - Mission
 - Products and services
- **GIS/OGC initiative**
 - Commander's intent
 - Approach
 - GIS objectives
- **Standardization issues**
 - Forecast time designation
 - Legends/Labels



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Air Force Weather Agency (AFWA)

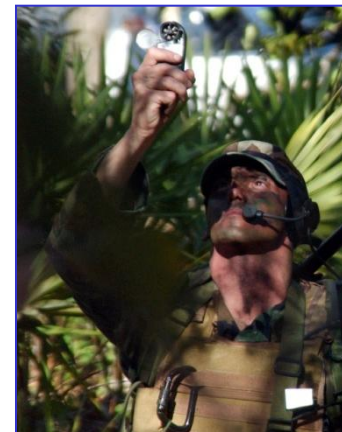
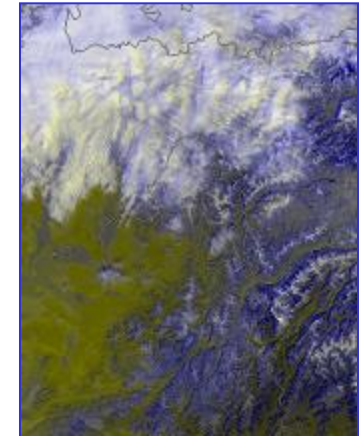
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A Global Team for the Global Fight



**Maximizing America's
Power through the
Exploitation of Timely,
Accurate, and Relevant
Weather Information;
*Anytime, Everywhere***





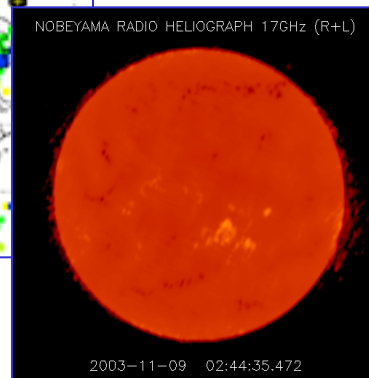
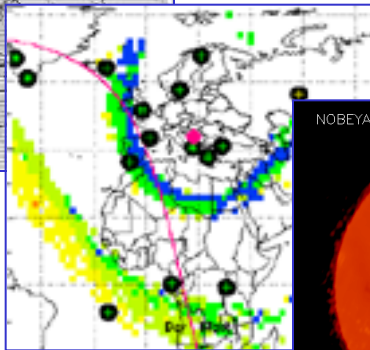
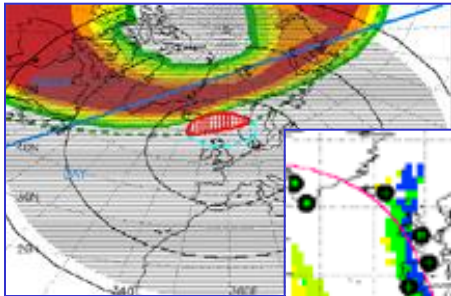
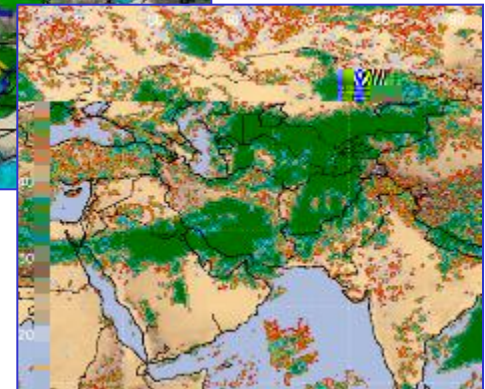
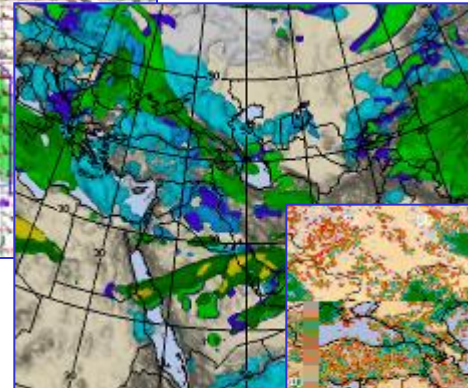
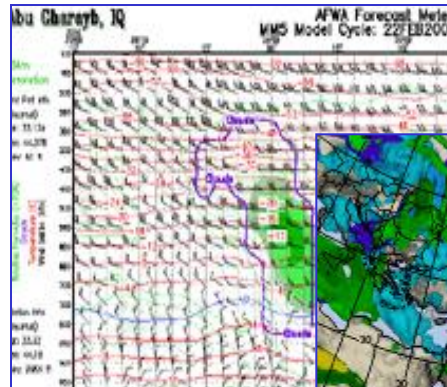
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AFWA

Products and Services



- Terrestrial weather
- Climatology
- Space weather



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Our Products and Services: Global Access for a Global Team



The screenshot shows the JAAWIN (Joint Air Force & Army Weather Information Network) website. At the top, it says "Welcome to JAAWIN" and "JOINT AIR FORCE & ARMY WEATHER INFORMATION NETWORK". Below this is a navigation menu with links to Services, Alaska, CONUS, S. America, Europe, Asia, SW Asia, Africa, Australia, Oceans, Hemisphere, Tropical, Climatology, Space, Environmental Events, Special Support, Maps, and Image of the Week. The main content area features a large world map with the text "800,000 Products daily", "13 Million Hits and", and "950GB downloaded monthly" overlaid. At the bottom, there are several small circular logos and a link to "Please read this privacy and security notice".

800,000 Products daily

13 Million Hits and

950GB downloaded monthly



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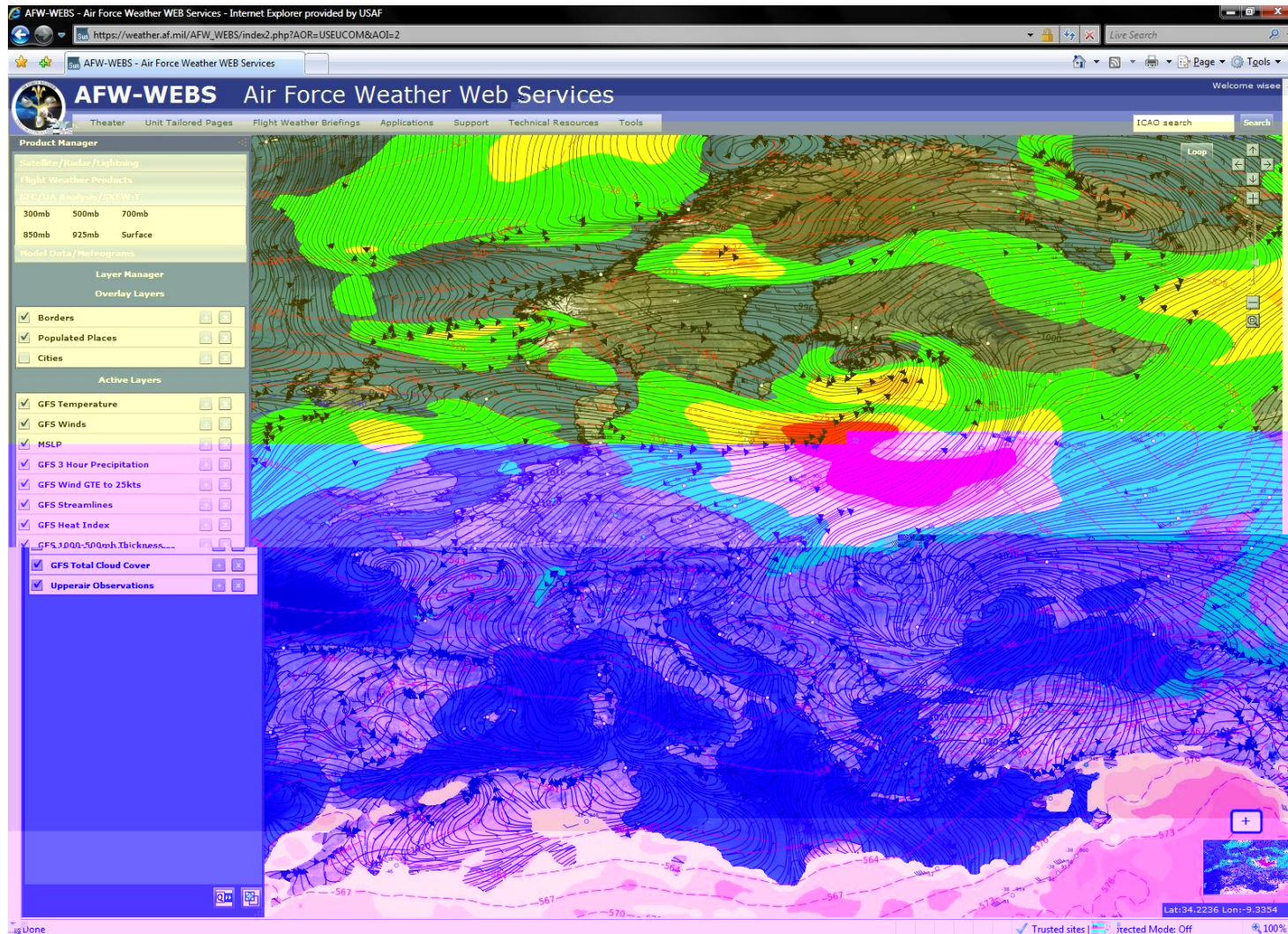


GIS/OGC Initiative: AFW-WEBS



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GIS/OGC Initiative: AFW-WEBS



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- **Revolutionize Air Force Weather (AFW) external-facing web pages & web services**
- **Integrate AFW web content into single weather.af.mil URL**
 - **Replace AFW external-facing pages**
 - **Supports both weather operator & non-weather operator**
- **Build suite of OGC services (WMS, WFS, and KML)**
 - **Feed for weather.af.mil GIS viewer**
 - **Feed for other non-weather operator GIS viewers**
- **Provide WF web-enabled reachback for operations**
 - **Includes capability to modify features**
 - **Host locally generated content**
- **Provide similar capability on all three security enclaves**



GIS Approach



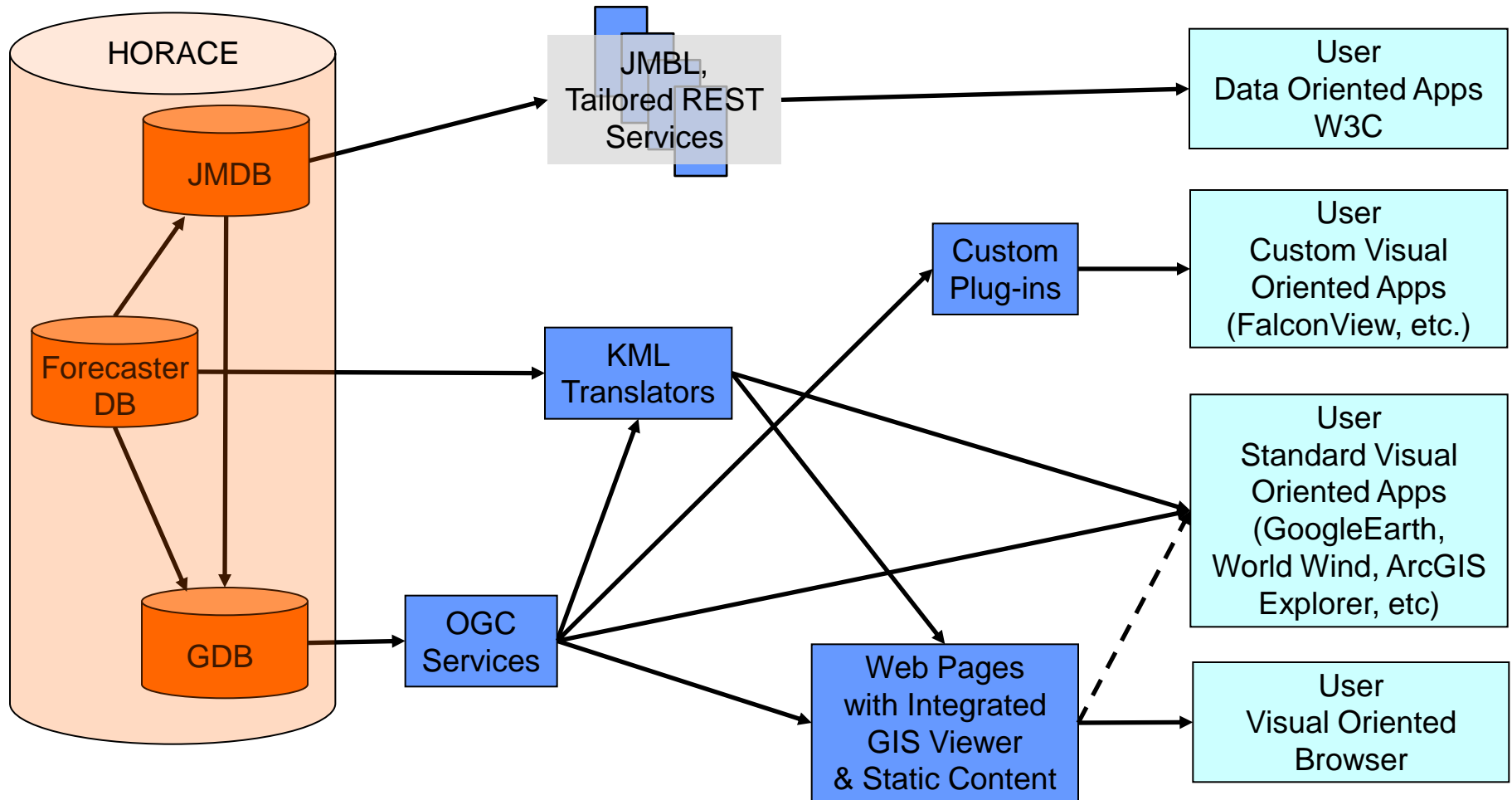
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- **Functionality and content built as an Enterprise Web Consortium (EWC) team**
- **Using common CM environment for page development**
- **Following OGC-aligned, standard AFW implementation for the services**
 - **Currently accomplished with:**
 - **HORACE (IBL's VW) at AFWA & 21 OWS**
 - **JET (ArcGIS) at remainder of OWSs**
 - **ArcGIS at 14 WS**
- **Rolled-out in continual, rapid, incremental fashion**



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GI&S Objectives: Visual Content from Services





GI&S Objectiv:



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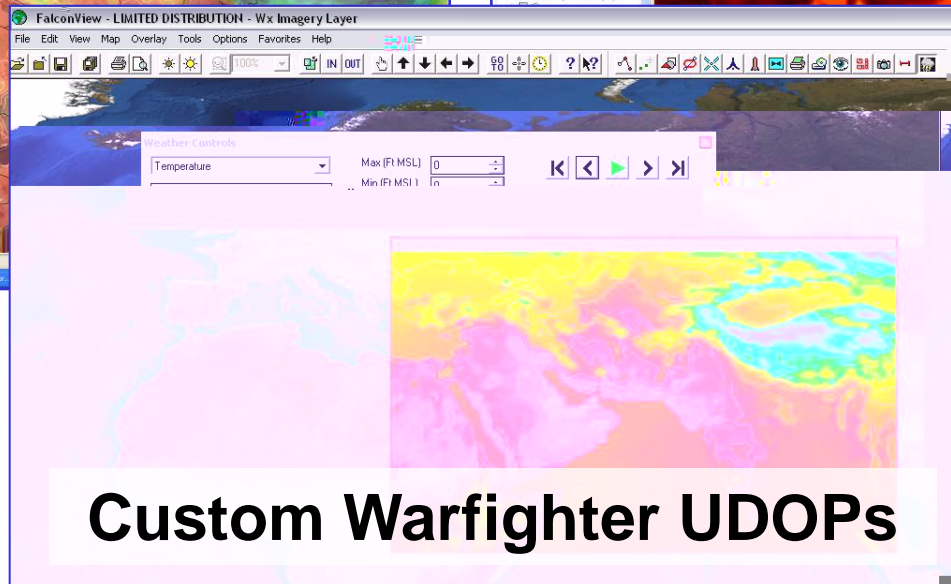
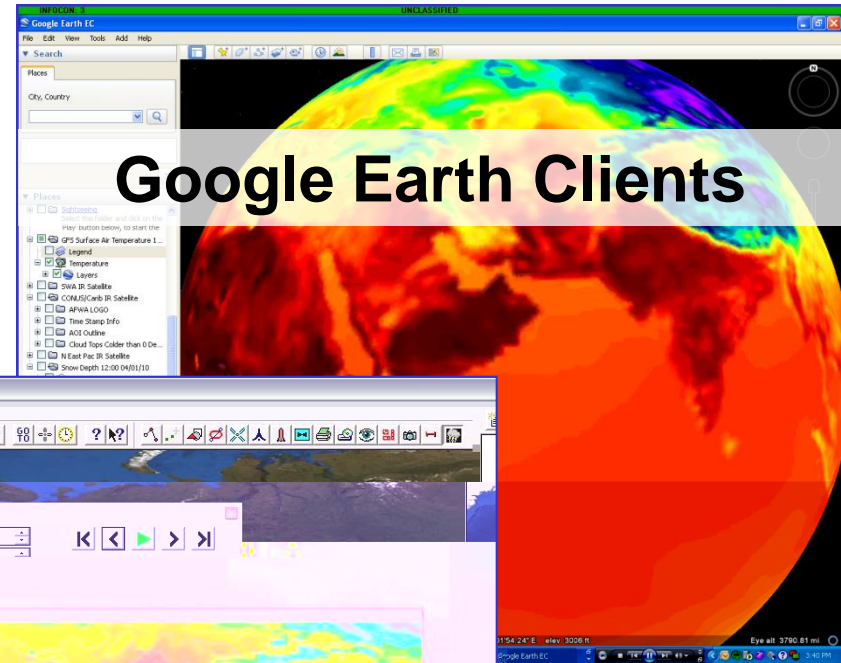
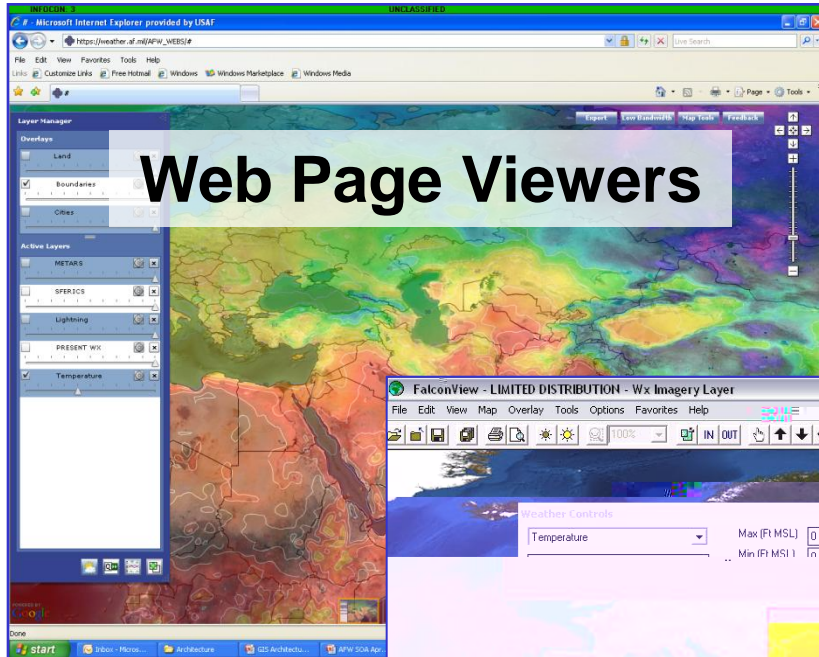
- **Build OGC based services following agreed upon “best practices” and international standards**
 - Intend to use OGC Met Domain Working Group recommendations
 - Expect endorsement by WMO of Met DWG efforts
- **Currently using UK/IBL spec w/ WMS optional elements**
- **Implementation standardization required**
 - Standards are like building codes; using same set of codes does not guarantee same house
 - Will utilize Met DWG “best practices”
 - KML standards still needed; ideas on stove simmering



GI&S Objectives: Viewer Agnostic



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Custom Warfighter UDOPs

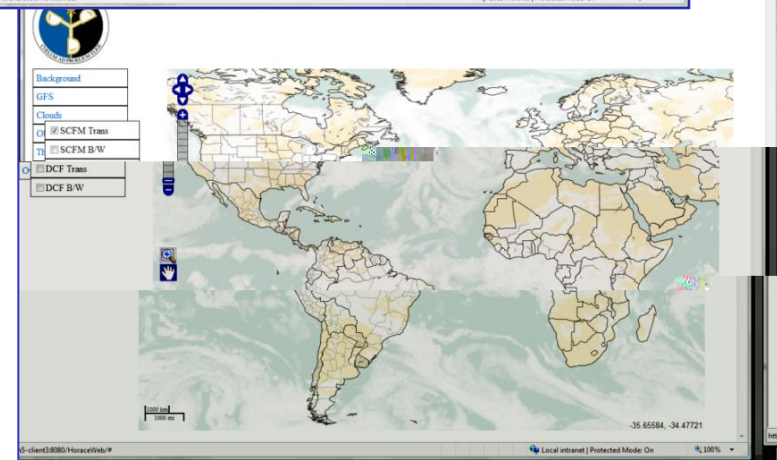
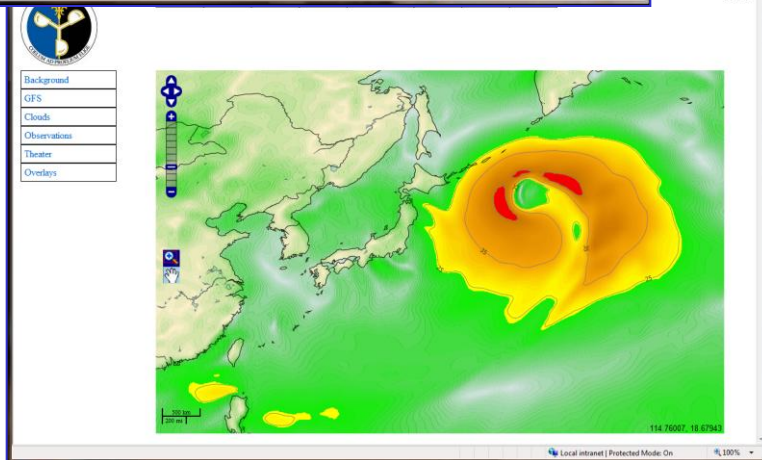
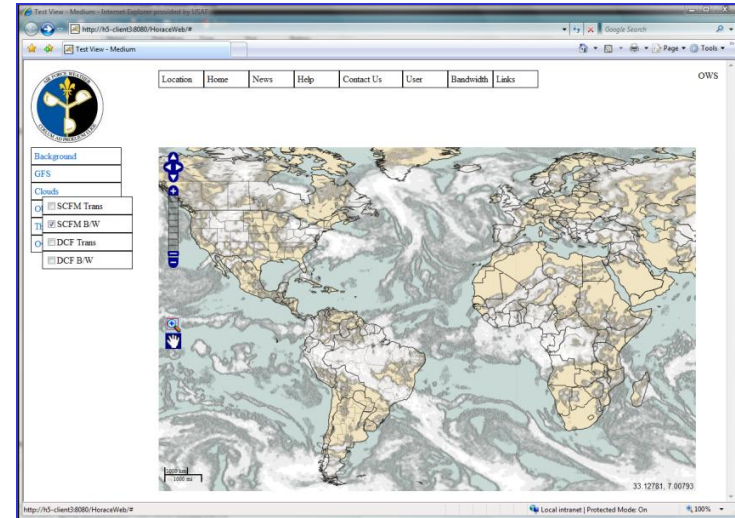
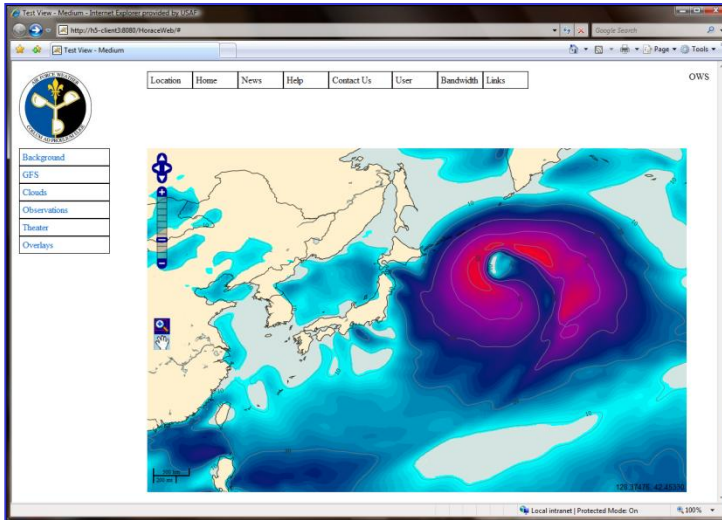
Surface Temperature Examples

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GI&S Objectives: Multiple Product Styles



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Where Is AFW-WEBS Today



- **Built initial suite of OGC-based services**
 - Focus on WMS initially
 - Plan to use WFS and WFS-T in the near future
 - WCS usage undefined at moment
- **Built initial web-page & GIS viewer for weather.af.mil**
- **Built GE globe**
 - Will use GE base maps for AFW-WEBS viewer
 - Will also use GE plug-in within viewer for 3-D exploitation



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Standardization Issues



Forecast Time



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- OGC specs do not directly handle designation of temporal aspects of forecasts
- TIME element can be used to represent valid time
- Need to extend WMS to allow user to select specific meteorological data
- AFW-WEBS is using IBL's implementation of OGC spec for temporal extensions to WMS GetMap
 - DIM_RUN designates the base reference time for the forecast run
 - DIM_FORECAST designates the forecast period (e.g. 3 hour forecast)



Legends/Labels



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- **WMS GetMap requests while visually pleasing are “wall paper” without associated legends**
 - Legend for display layer should be optional
 - Location for legend should be selectable by user
- **AFW-WEBS is using IBL’s implementation of OGC spec that uses style element to describe legend layer property**

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<Title>**Legend**</Title>

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<Format>**image/png**</Format>

<OnlineResource

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xlink:type="**simple**" />

</LegendURL>

</Style>



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Other Discussion Points



- To optimize caching for AFW-WEBS viewer, have implemented client-side tiling request
 - Not using Web Map Tile Service (WMTS) spec
 - Would a MET DMWG WMTS implementation be beneficial for viewer agnostic operations?
- There is a need for “baked”/concatenated products
 - Not uncommon for a combined layer visualization for things like land, temp, clouds
 - Recommend a standard but optional transparency element different than the transparent element

&LAYERS=BUILTUPA_1M,COASTL_1M,POLBNDL_1M&
STYLES=&FORMAT=image/png&TRANSPARENCY=100,60,40

versus

&LAYERS=BUILTUPA_1M,COASTL_1M,POLBNDL_1M&
STYLES=0XFF8080,0X101040,BLACK&FORMAT=image/png&BGCOLOR=0xFFFFFFFF&
TRANSPARENT=TRUE&EXCEPTIONS=INIMAGE



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Summary



- AFWA fully engaged with use of OGC services
- Initial capabilities exist
- Extending WMS for METOC not without challenge
 - Required use of optional elements of WMS spec
 - Precludes direct consumption within Google



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Questions?



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