Meteorology and Bandwidth

24225

Meteorology, like many other human endeavors,

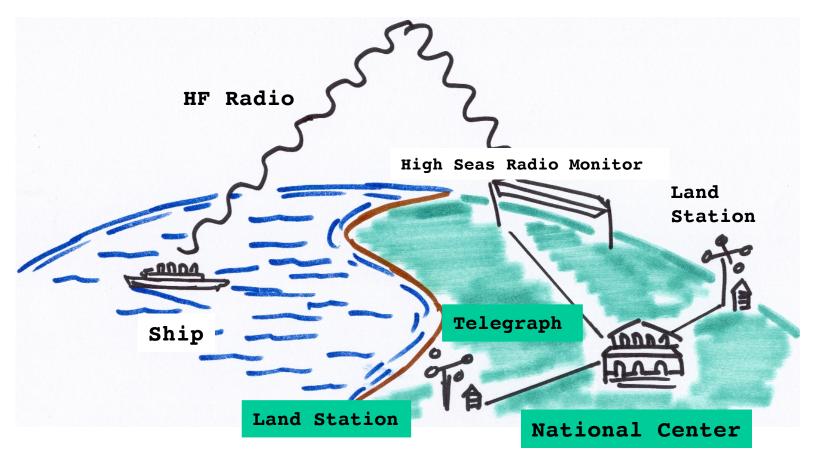


Is a salve to its history.

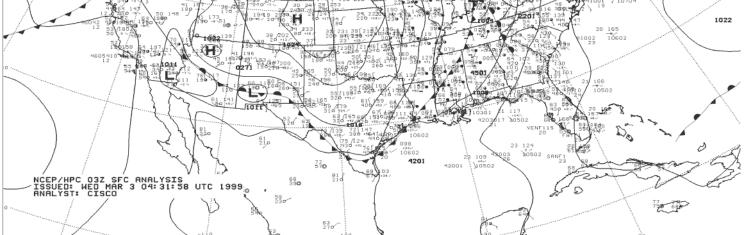
Some History

- Land-line telegraph (1870s)
- Radio ship reports (1900s)
- Upper air observations (1930s)
- Refectivity radar (1940s)
- Polar orbiting satellites &
- Barotropic numerical models (1960s)
- Geostationary satellites &
- Baroclinic numerical models (1970s)
- Doppler radar (1980s)
- Targeted observations &
- Coupled models (1990s).

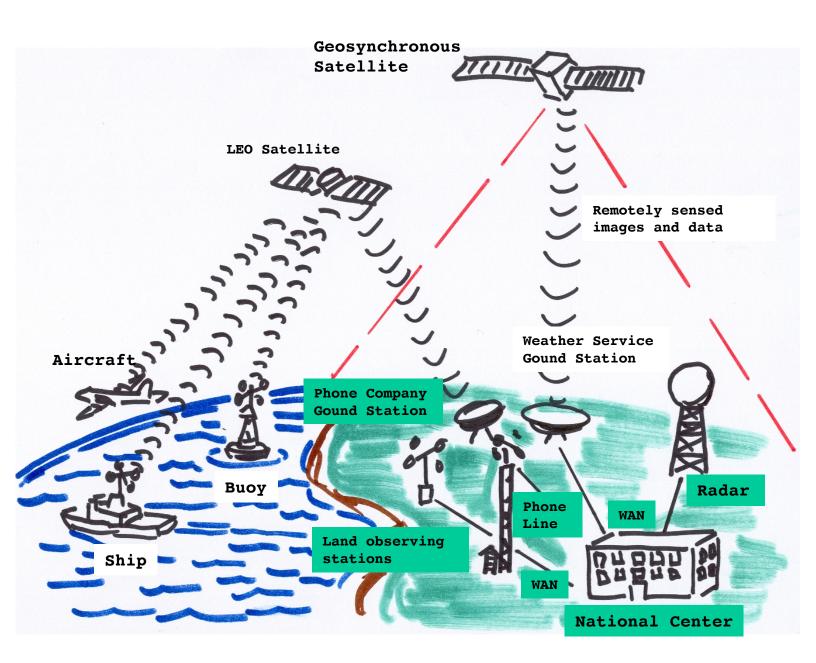
Weather Communications in 1910



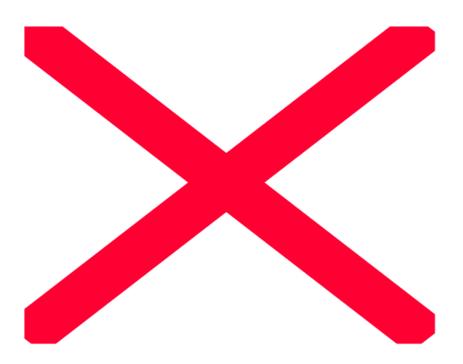
Suppose Weather Map



Weather Communications in 2000



Worldwide RAWINSONDE Ascents, September 2000



A Meteorological Observation

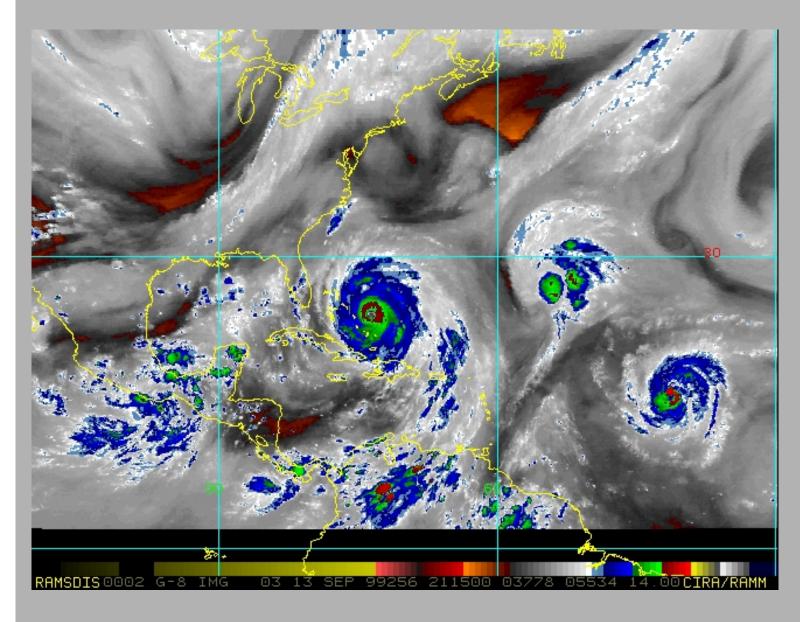
NNNN	
ZCZC MIAREPN UZNT13 KNHC	
AF984 0917A	OPAL OB 12 KNHC
XXAA 53207 00834 /////	99238 70908 08230 99963 26416 ///// /////
92356 24409 34505 88999	///// 85093 21208 29004 70765 15822 77999
XXBB 5320/ 22803 22715	99238 70908 08230 00963 26416 11896 15823
33695 15820	
	///// 11913 27003 22695 34505=
NNNN	

Aerosonde

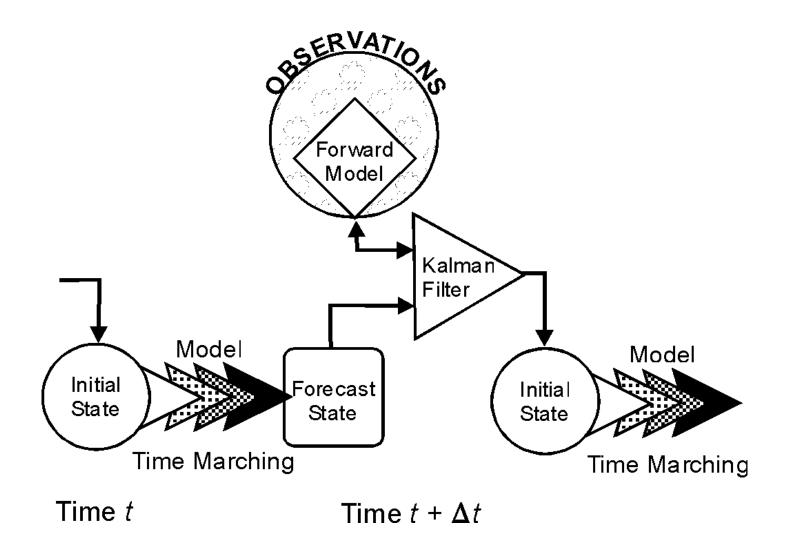
Will rely on GPS navigation, satellite telephony & a tiny, turbo-compounded piston engine.



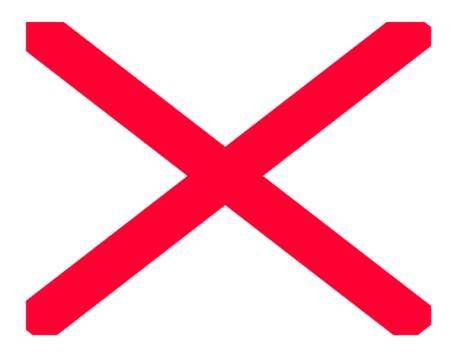
Water-vapor Image of Hurricane Floyd



Optimal Data Assimilation



Hurricane Floyd



Summary

Many small (1-2Kb) observations transmitted from widely dispersed sites to analysis centers.

LEO telephony works well for mobile platforms.

High bandwith (1-100 Mb) analyses forecasts and animations from center to field.

No one-to-one correspondence between observation sites and data users.

"Forward interpolation" data analysis is starting to require more field-to-center bandwith.

Thank you for your attention.

Questions?

