

TIGGE Database for Tropical Cyclone Tracks

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Acknowledgments: Beth Ebert (BoM), all the operational centers providing data

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TIGGE TC database

- At IWTC-VI (Nov 2006), it was recommended that a unified real-time database of TC forecast tracks was established to benefit operations and research.
- TIGGE = THORPEX Interactive Grand Global Ensemble
- <http://www.bom.gov.au/bmrc/projects/THORPEX/CXML/index.html>
- Data in Cyclone XML format (CXML)
- Detailed documentation and decoders available on website
- Need passwords from respective centers

Cyclone XML

```
<disturbance ID='2008090400_218N_533W'>
  <cycloneName>Ike</cycloneName> <!-- 09L -->
  <cycloneNumber>9</cycloneNumber>
  <basin>North Atlantic</basin>

  <fix hour='96' source='model'>
    <validTime>2008-09-08T00:00:00Z</validTime>
    <latitude units='deg N' precision='0.1'>22.4</latitude>
    <longitude units='deg W' precision='0.1'>76.5</longitude>
    <cycloneData>
      <minimumPressure source='model'>
        <pressure units='hPa' precision='0.01'>996.1</pressure>
      </minimumPressure>
      <maximumWind source='model'>
        <speed units='m/s' precision='0.1'>27</speed>
        <latitude units='deg N' precision='0.1'>22.5</latitude>
        <longitude units='deg W' precision='0.1'>77.5</longitude>
      </maximumWind>
    </cycloneData>
  </fix>
```

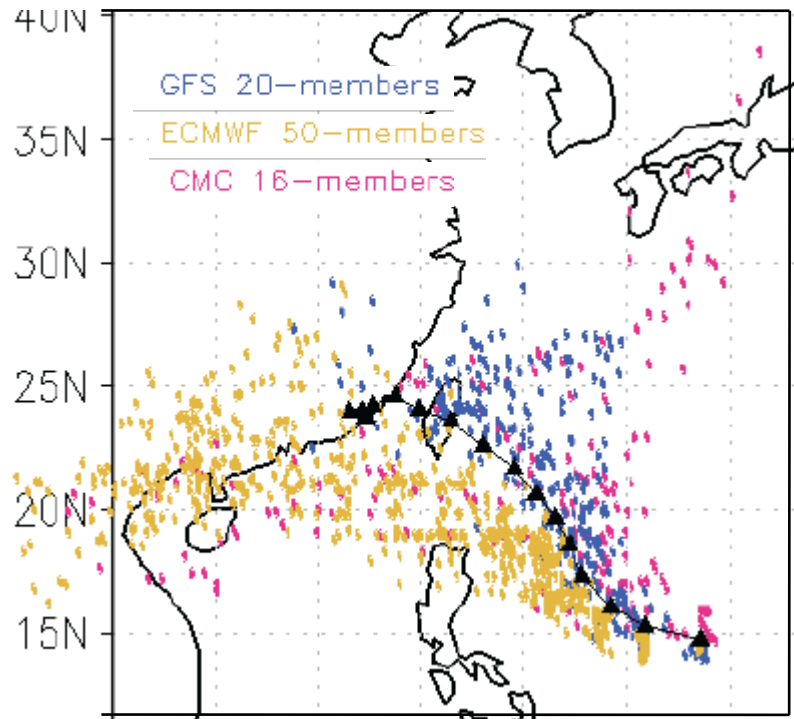
(we converted to

Available ensembles in NW Pacific

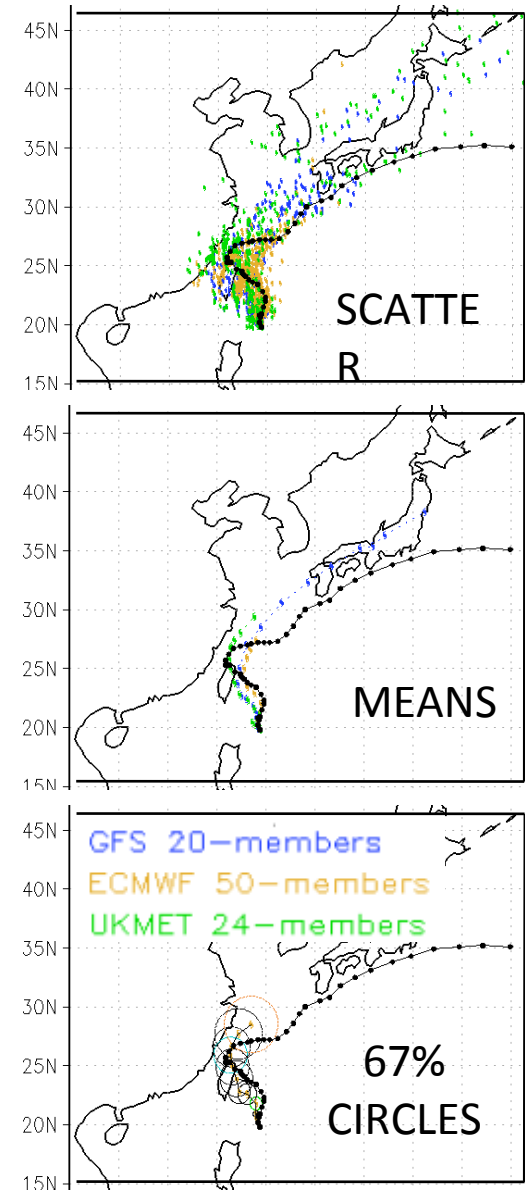
Agency	Frequency	#	Resolution	Perturbations
CMC	12 hours	20	c. 100 km	Perturbed obs
ECMWF	12 hours	51	c. 50 km	Tropical SVs
UKMet	12 hours	24	c. 90 km	ETKF
NCEP	6 hours	20	c. 80 km	Ensemble
transform				
JMA (TEPS)	6 hours	11	c. 60 km	Tropical SVs
JMA (WEPS)	24 hours	51	c. 60 km	Dry SVs
KMA				
CMA				

- ECMWF easy to decode
- UKMet nearly as reliable, staff very helpful
- NCEP data had bugs, and TC dissipates early in many cases
- CMC forecasts too unreliable: will improve

HAGUPIT: REAL-TIME (from NCEP)



SINLAKU (from TIGGE and NCEP)



Evaluation

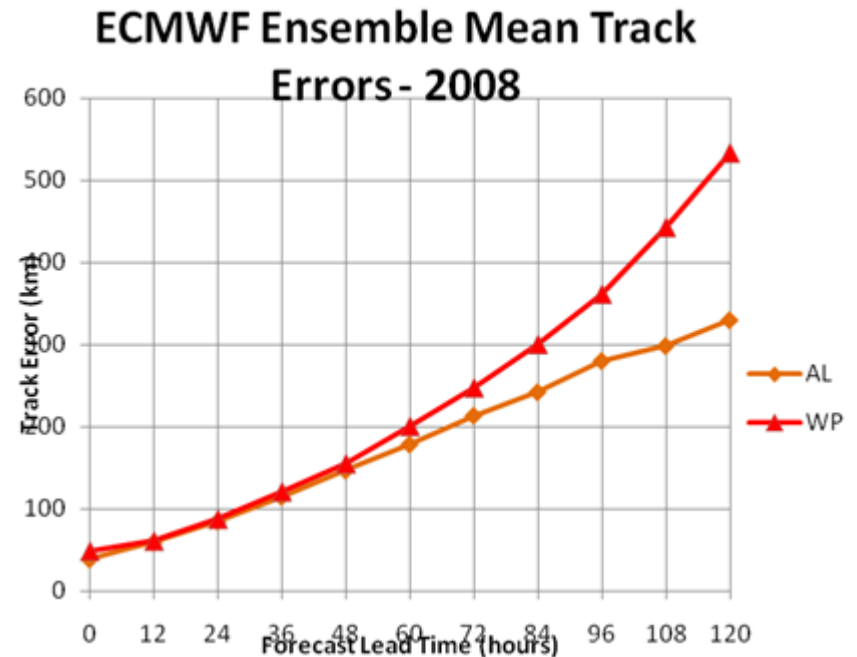
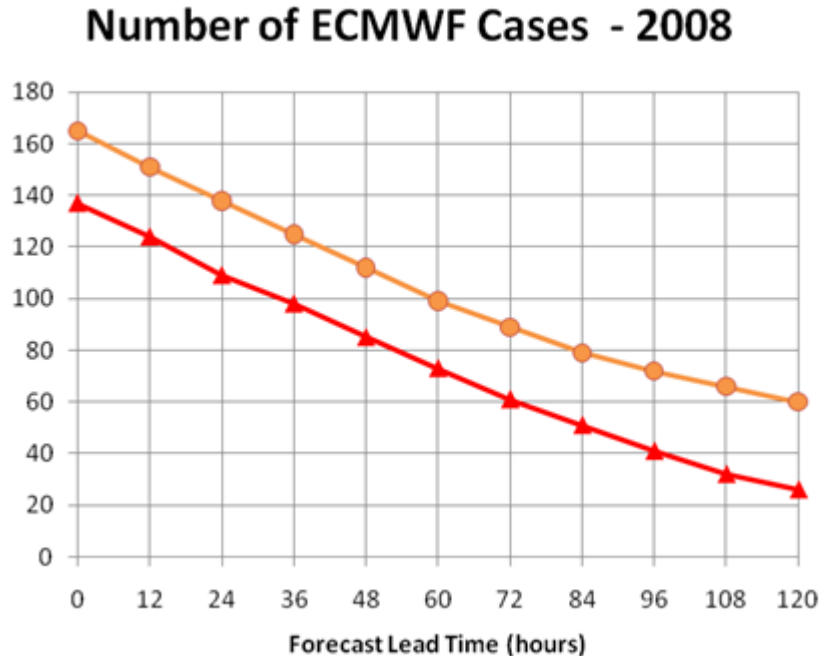
#	STORM	Ensemble init	# cases
03	TY Rammasun	050712-051212	11
04	TS Matmo	051512-051700	4
05	TY Halong	051600-052000	9
06	STY Nakri	052712-060300	14
07	TY Fengshen	061900-062512	14
08	TY Kalmaegi	071412-071812	9
09	TY Fung-Wong	072600-072900	7
10	TS Kammuri	080512-080712	5
12	TS Vongfong	081400-081400	1
13	TY Nuri	081500-082212	16
15	STY Sinlaku	091000-092012	22
18	TY Hagupit	091912-092412	11
19	STY Jangmi	092400-093012	14

**Only storms
verifying at TS
status or higher
are considered.**

Total cases:
ECMWF 137

Note that cases
are not entirely
independent
(successive 00Z
and 12Z
forecasts)

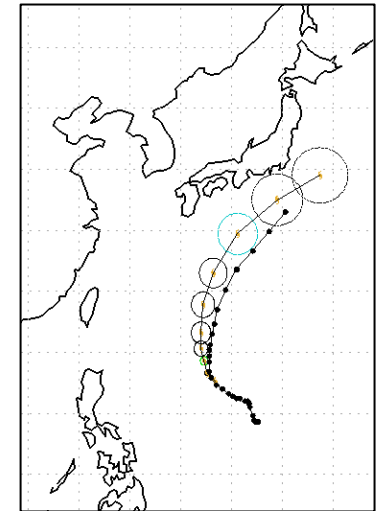
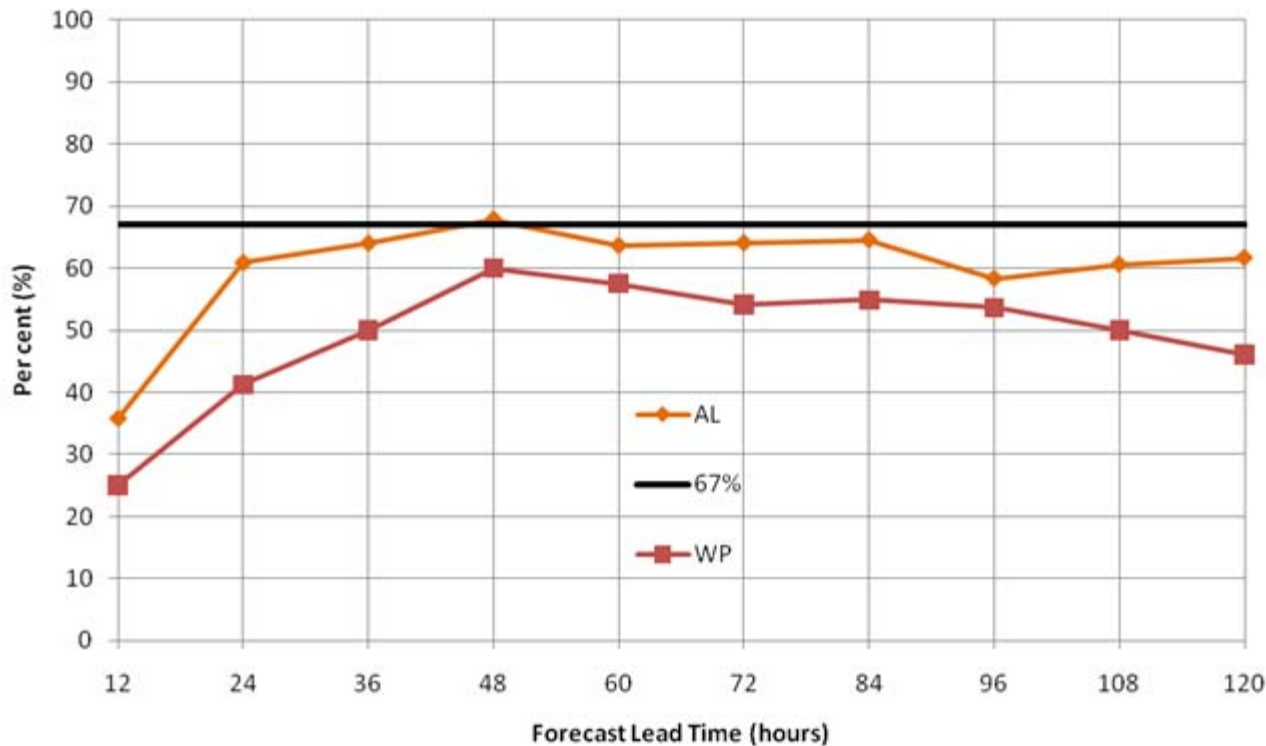
AL vs WP. Mean



Larger errors in ensemble mean in NW Pacific, particularly after 3 days

AL vs WP. Dispersiveness

Percent of Cases Where the 67% Ensemble-Based Cone Contains the Best Track - 2008



ECMWF ensemble is more under-dispersive than in Atlantic.
Problems with recurving storms, and with along-track errors.

AL vs WP. Cone Widths

Average 67% Cone Radius for ECMWF ensemble - 2008

