



Application for Total Solar Eclipse of 2009 and VLBI

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of Japan

Our applications

- Total solar eclipse
 - Live from IWO-Jima via WINDS.
- VLBI
 - WINDS enables to improve an accuracy of VLBI observation.

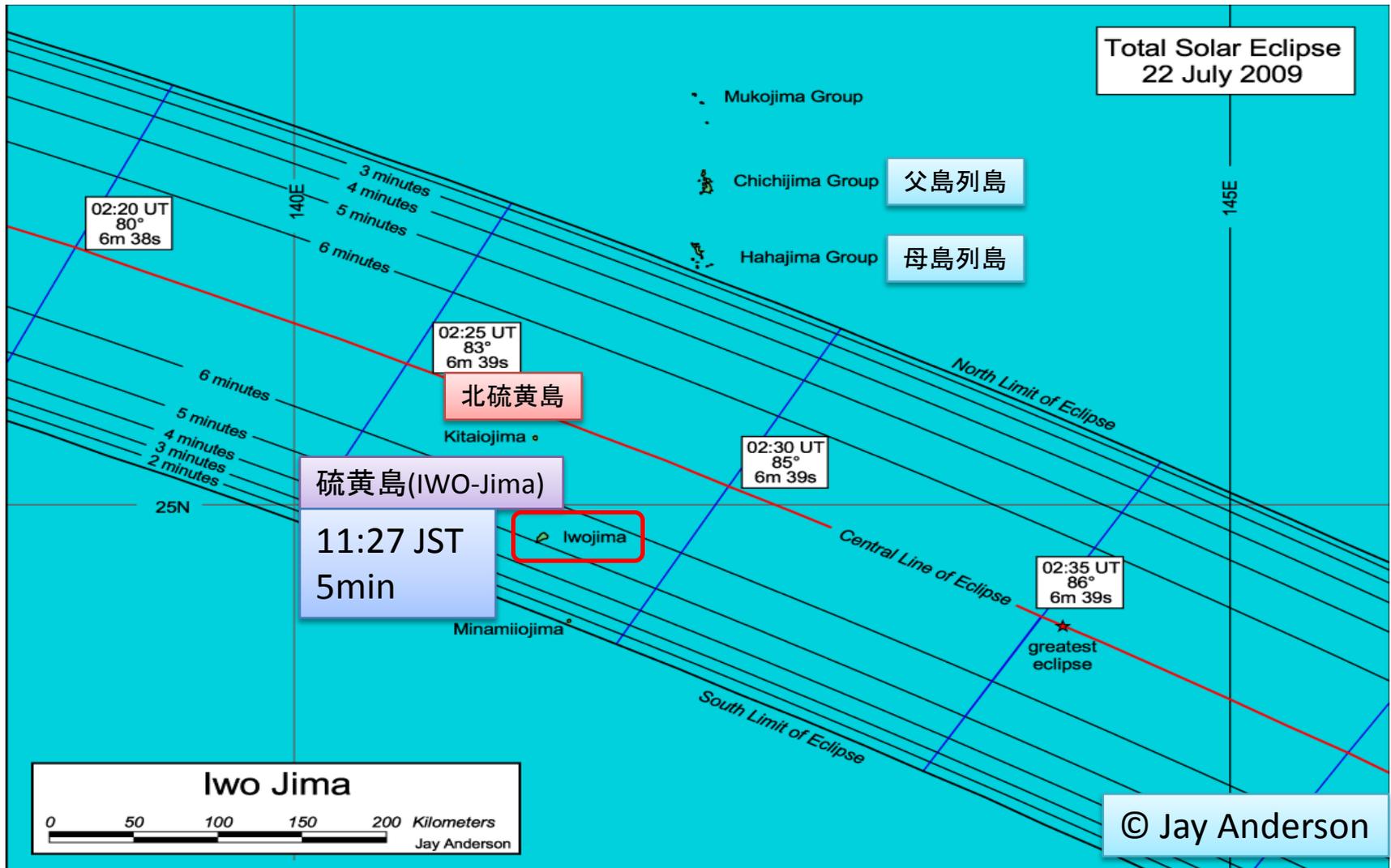


APPLICATION FOR TOTAL SOLAR ECLIPSE

Overview

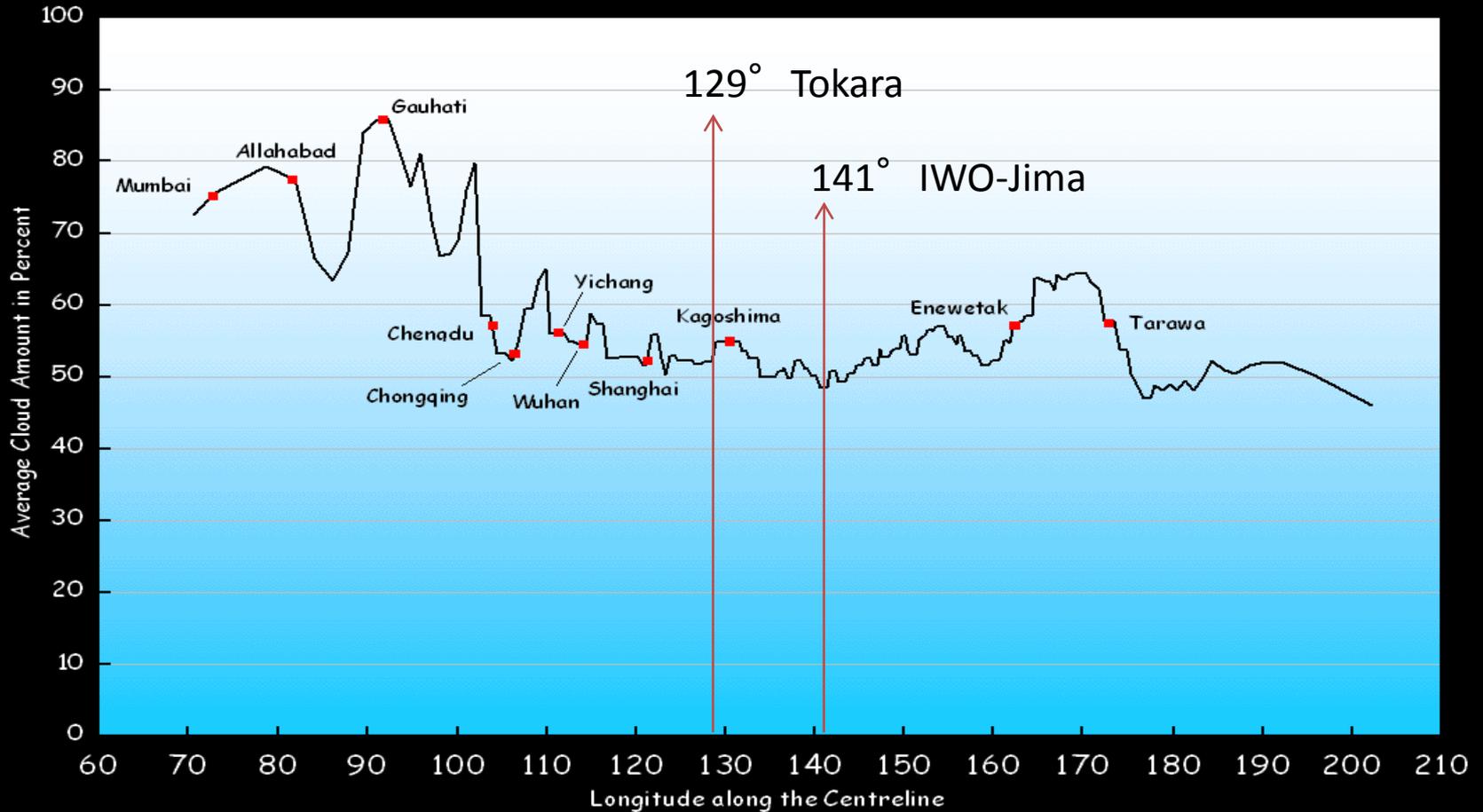
- On 2009 Jul. 22, a total solar eclipse is able to be seen.
 - The maximum duration of totality reaches over 6 min.
- The goal of this project is that many citizens can share the intellectual excitement to natural science.
 - This is an valuable opportunity for people to improvement in scientific literacy.
 - As a result of discussing the weather condition and environment, this project selected “IWO-Jima(硫黄島)”.
 - The high definition video stream of the total solar eclipse is transmitted from IWO-Jima.
 - The solar eclipse contents are disclosed without cost.
 - This project provide the stream for you with Open Content.

Total Solar Eclipse around IWO-Jima



Weather Fact

Total Solar Eclipse of 2009 - Average July Cloud Among Path



J. Anderson and F. Espenak

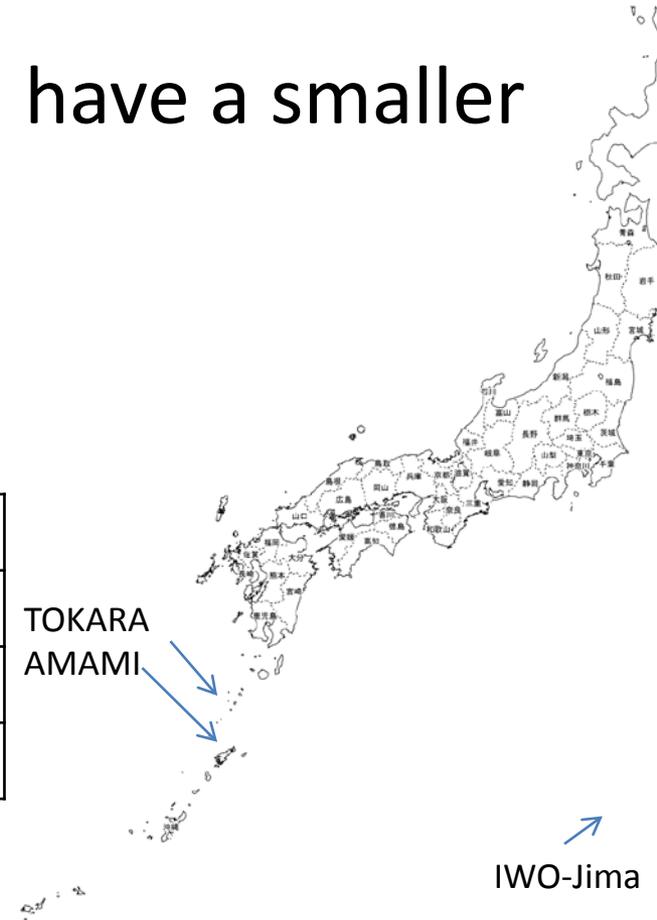
Weather Fact

- In the past ten years, IWO-Jima have a smaller risk of typhoon.

The number in the path of the typhoon

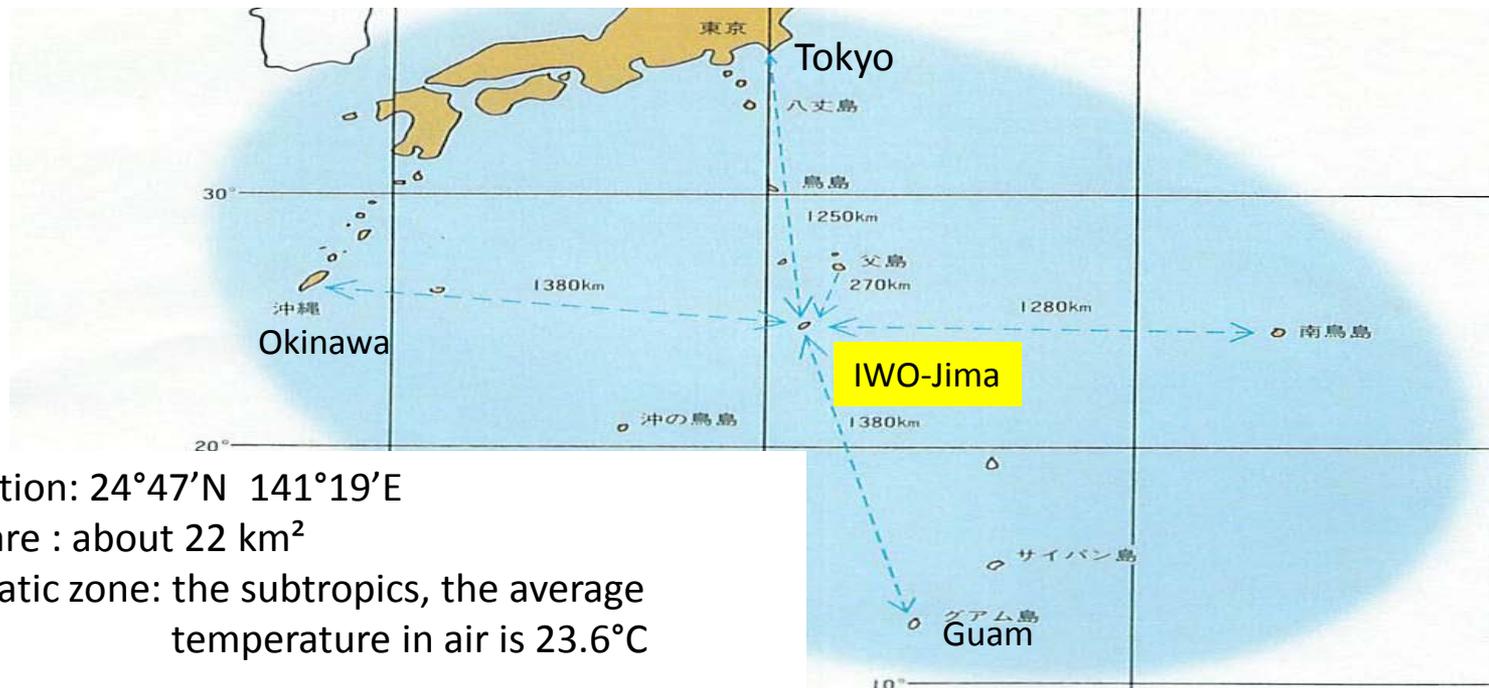
	July			August	
	1-10	11-20	20-31	1-10	11-20
IWO-Jima	0	1	1	4	1
Tokara	1	2	8	6	0

Source JAXA typhoon path data base



About IWO-Jima

- IWO-Jima is mainly administrated by Japan Ministry of defense(MOD).
 - No permanent civilian population / Off limits to civilians.
 - Our project is permitted by MOD.
- No optical fiber has been landed.
 - Good location for WINDS



Location: 24°47'N 141°19'E

Square : about 22 km²

Climatic zone: the subtropics, the average temperature in air is 23.6°C

Source IWO-Jima guide by Japan Maritime Self-Defense Force, MOD.

The proposed Observation sites

Supply Unloading area



Hot steam trench area



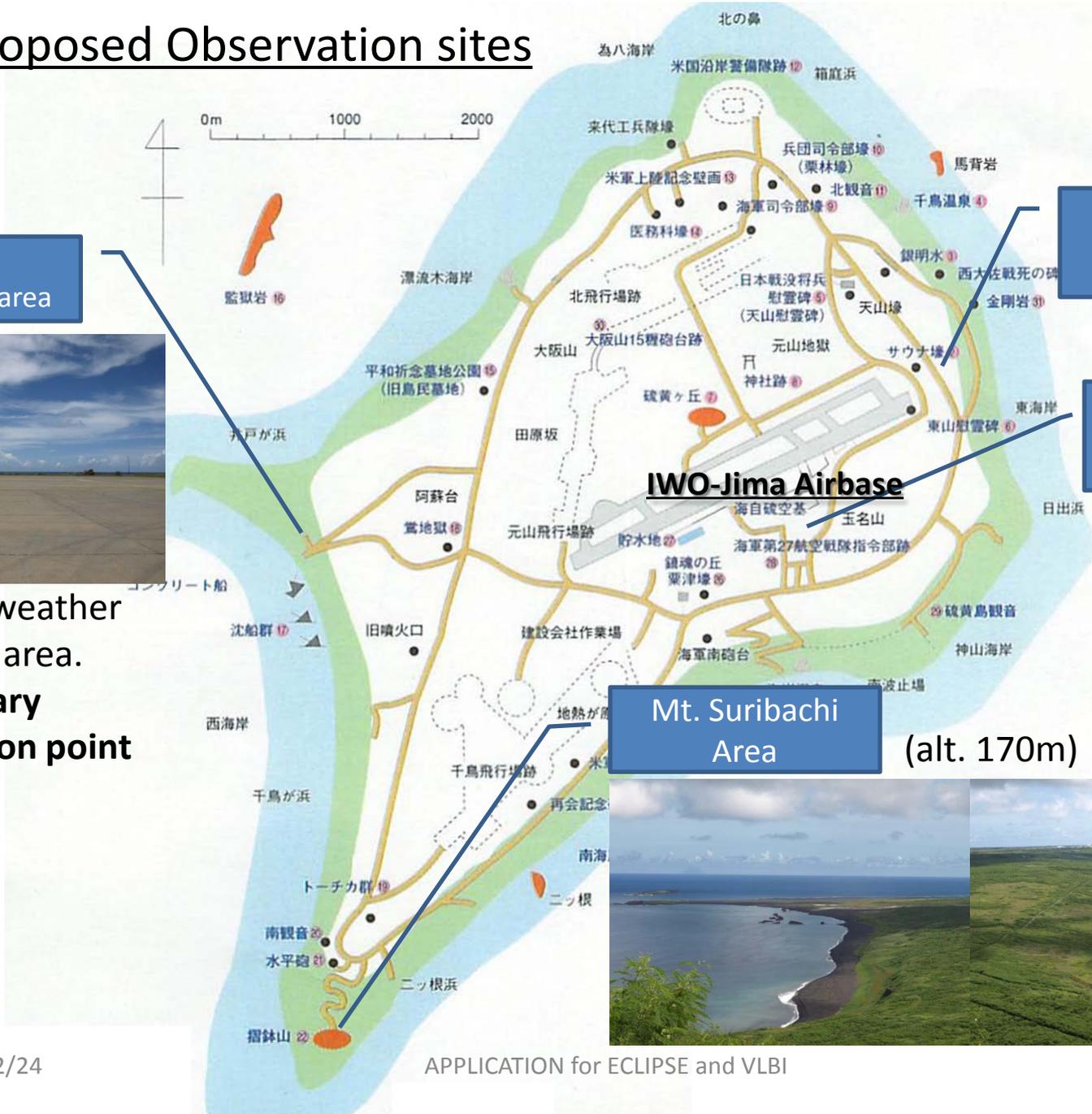
IWO-Jima Airbase area



IWO-Jima Airbase

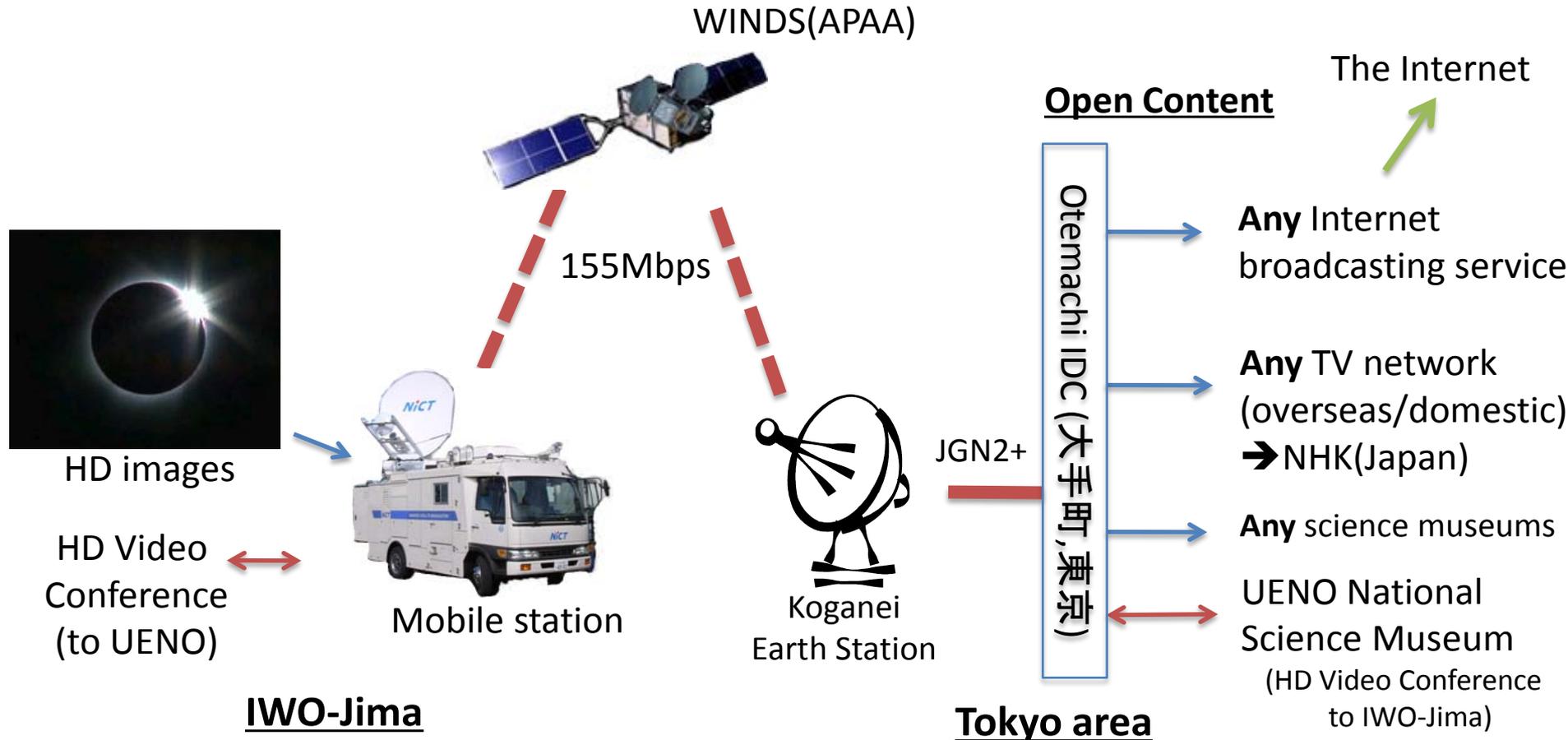
Mt. Suribachi Area

(alt. 170m)



The best weather condition area.
The primary observation point

System architecture



Many citizens can share the intellectual excitement to natural science.

Live

- Make the most of WINDS
 - 150Mbps link from IWO-Jima
 - It enable to transmit 1~3 HD quality video.
 - The Solar eclipse image, a landscape...
 - NHK is planning the solar eclipse special program using these images.
 - Bi-directional link
 - HD Video conference between IWO-Jima and UENO National Science Museum.
 - The scientist in an observation site lectures about the solar eclipse.



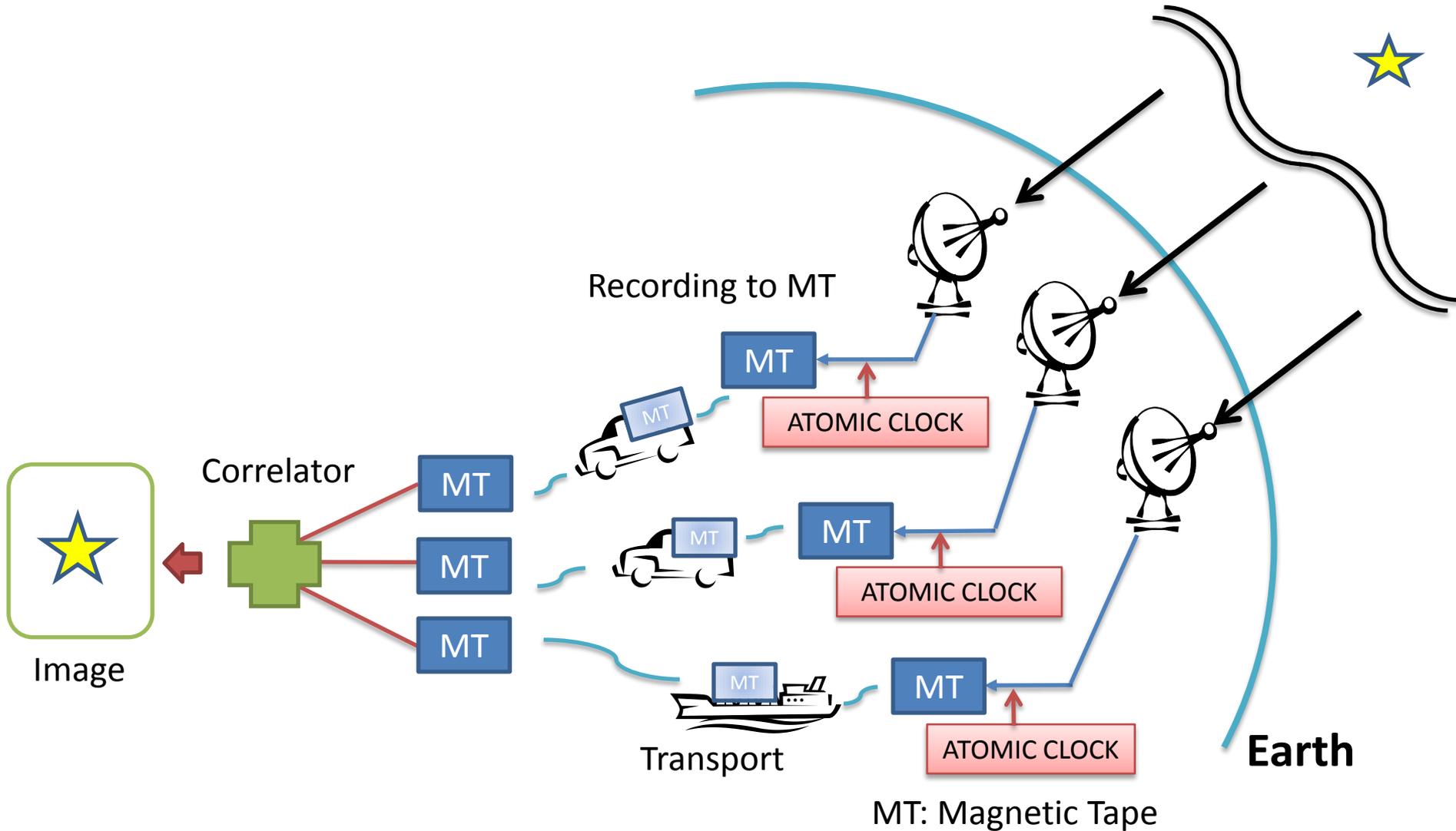
conclusion

WE HOPE THE WEATHER CLEARS UP .

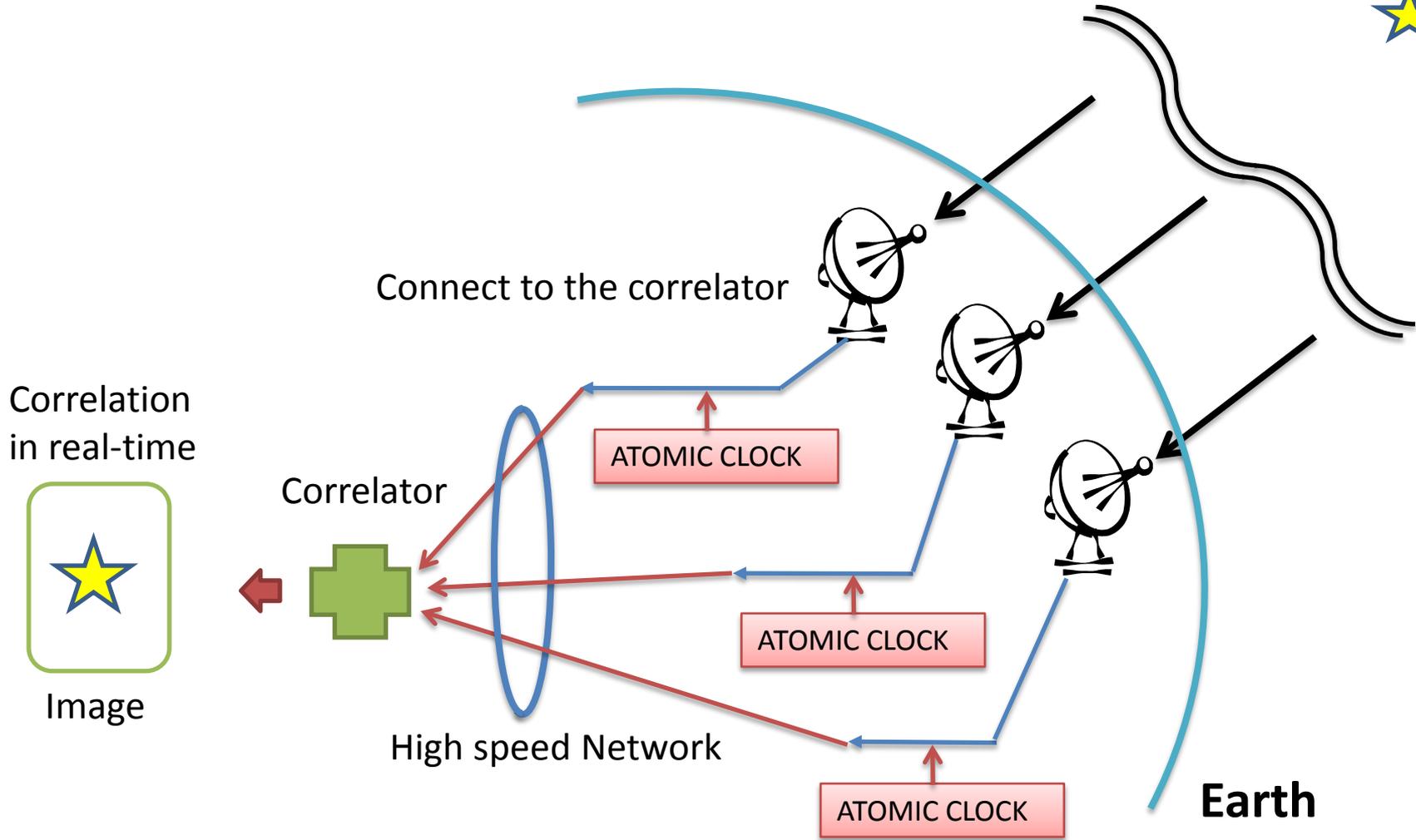
See you on July 22th.

APPLICATION FOR VLBI

About VLBI



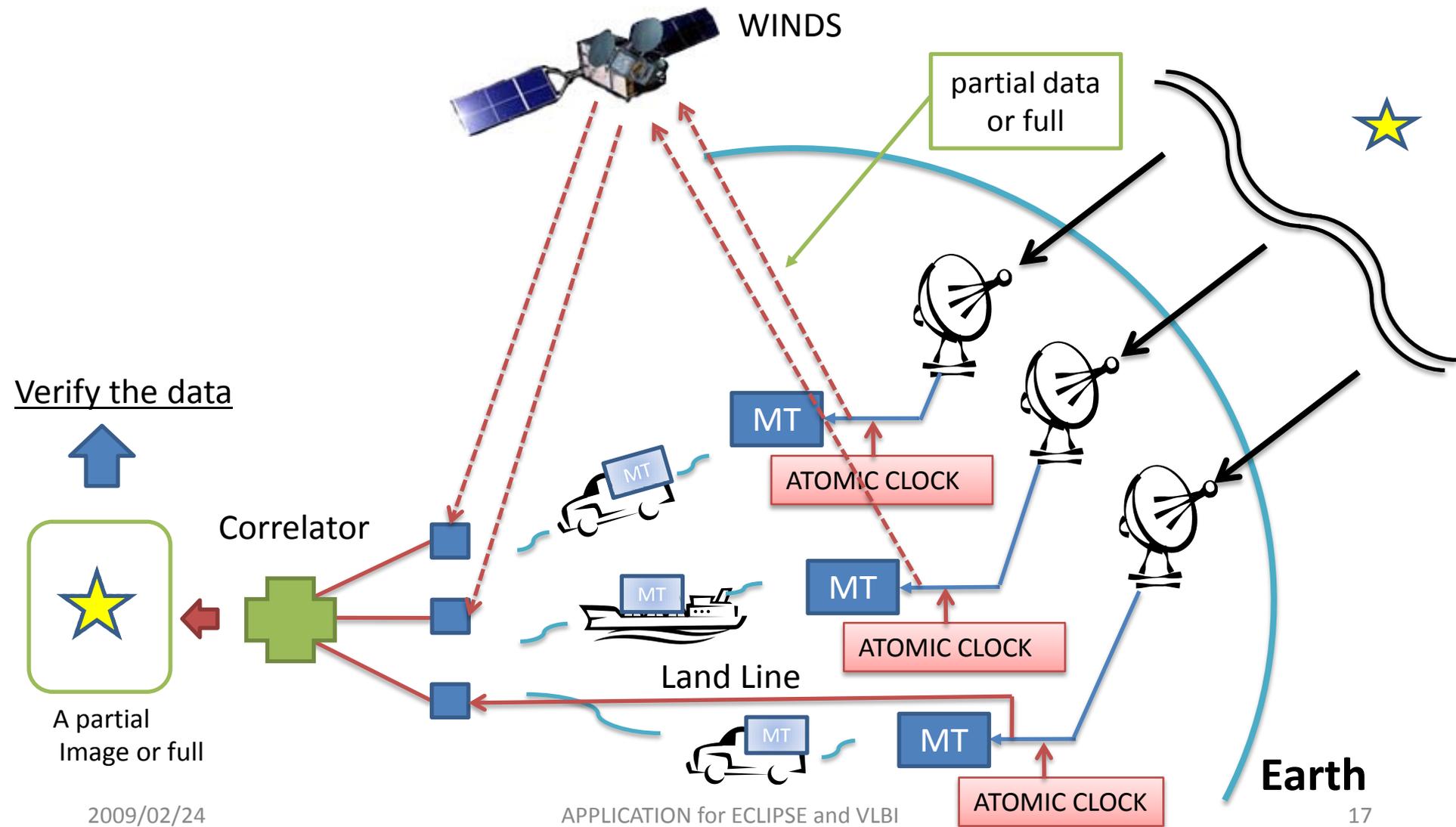
About e-VLBI



Issue

- In case of MT
 - The validity of observational data is not known until it processes MTs with the Correlator.
 - In case of e-VLBI
 - Cost issue.
 - No optical fiber has been landed in Ogasawara.
- ➔ WINDS APAA(155Mbps) can send a partial observational data to the correlation system.
The data is verified by correlation processing of the partial data without MT.
- ➔ WINDS (622Mbps) can send a full set of observational data .
It's application for the satellite based e-VLBI. (proposed by NICT)

VLBI+WINDS

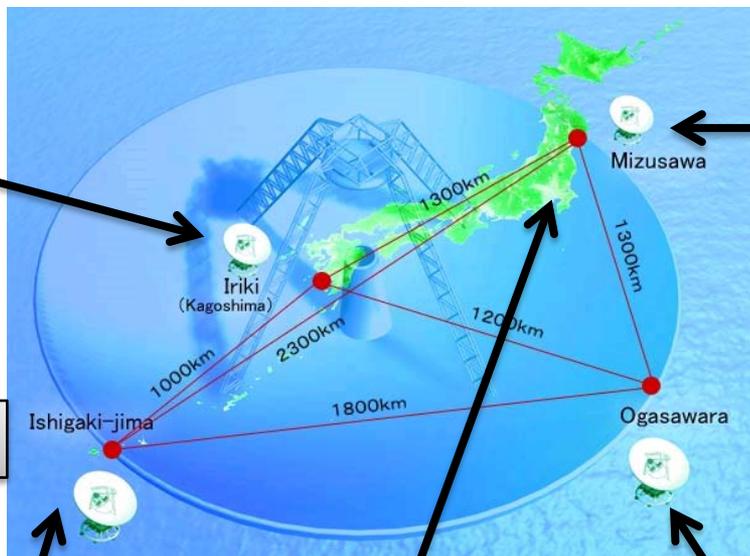


Location plan(June, 2009) (NAOJ)

The array consists of 4 stations.



IRIKI(入来), KAGOSHIMA



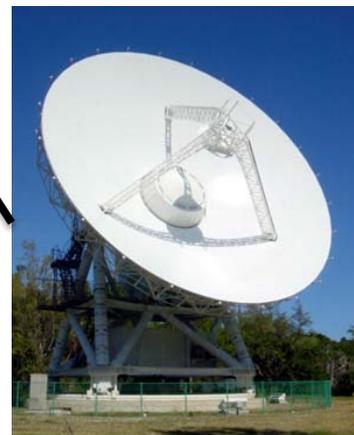
MIZUSAWA(水沢), IWATE



ISHIGAKIJIMA(石垣島), OKINAWA

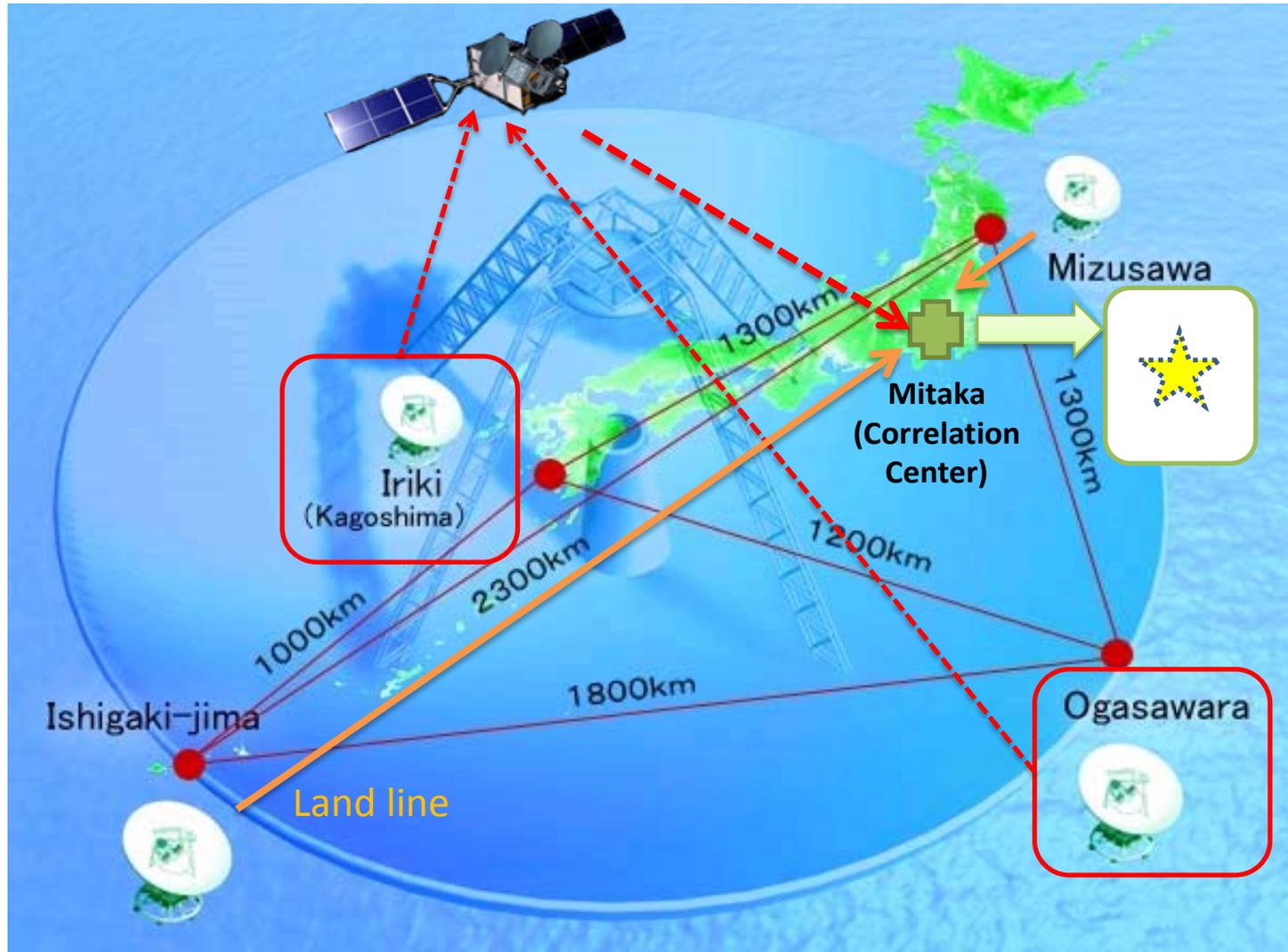


MITAKA(三鷹), TOKYO



OGASAWARA(小笠原), TOKYO

Location plan(June, 2009) (NAOJ)





Real-time e-VLBI experiment by WINDS (plan)

Satellite based e-VLBI will support rapid earth rotation measurement by remote antennas
(This is an initial localized experiment)

Radio Galaxy emission
(white noise)



NICT Koganei
11m radio telescope



JGN2 test-bed network
as other telescope data



Kashima
34m radio
telescope



WINDS mobile station

NICT Kashima Space Research Center

Transfer 622Mbps
continuous e-VLBI data



WINDS fixed station



VLBI product
by high-speed
real-time
processing



Thank you.

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