

# 東アジアVLBIネットワーク

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VLBI次世代相関器WS

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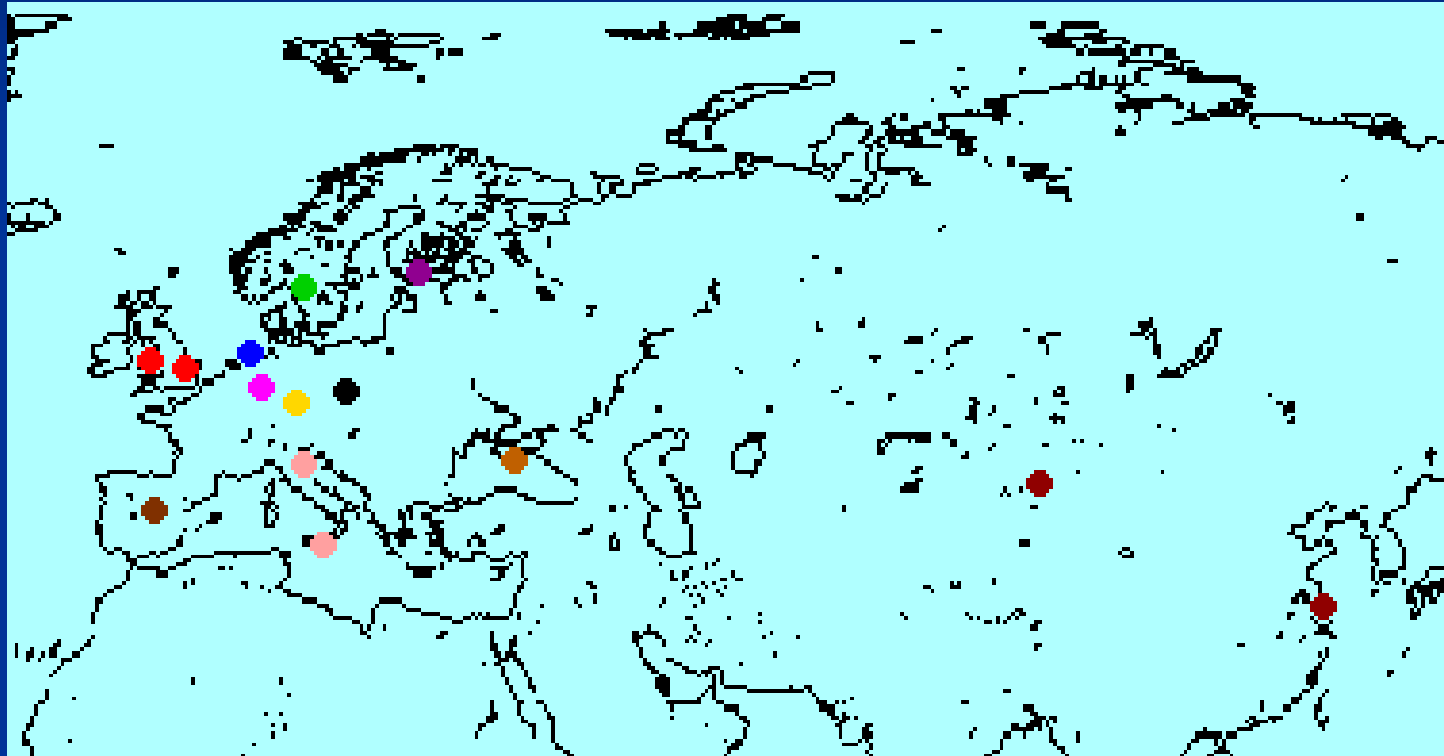
# VLBI network in the world

- 2000 km extended array
  - EVN ; 1.6, 5, 22 GHz
  - LBA ; southern hemisphere
  - KVN + VERA + Jnet ; 22,43 GHz, phase referencing, high sensitivity
- >5000 km extended array
  - VLBA

# eMERLIN



# EVN

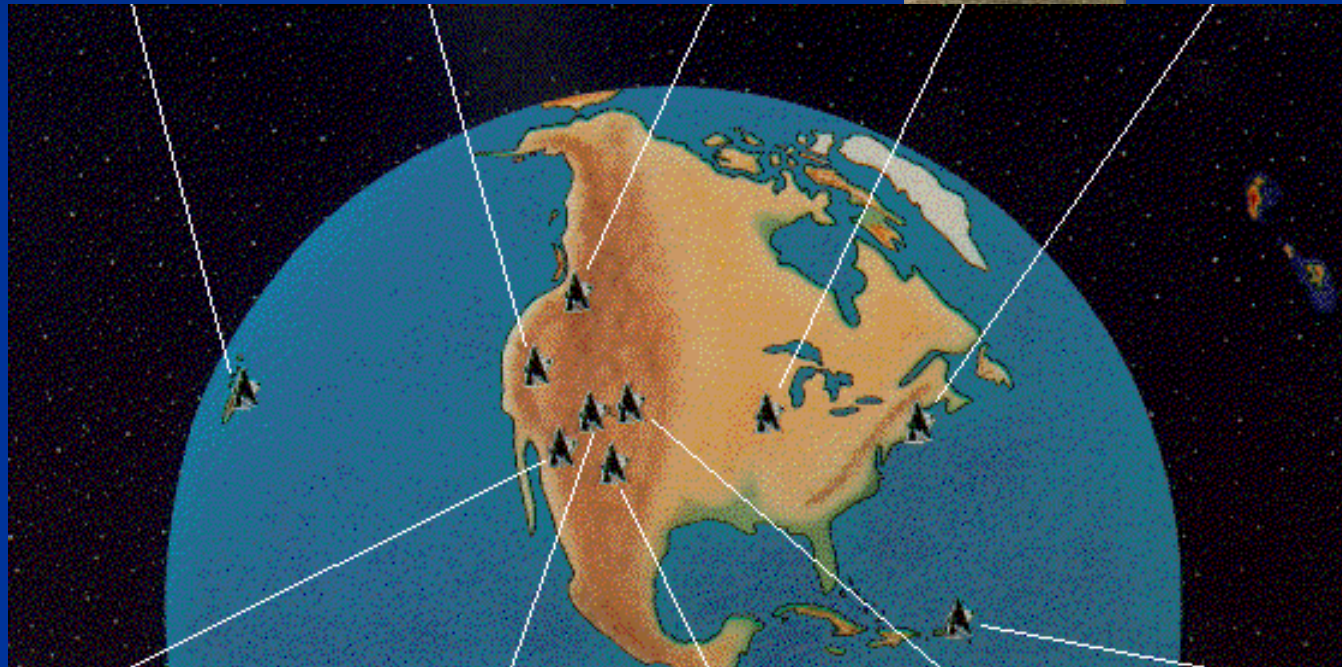


# LBA

VLBI Telescopes Within Australia



# VLBA





# Scientific target of East Asia Network

- **High frequency network**
  - **22, 43, 86 GHz network**
  - **H<sub>2</sub>O, SiO maser observations**
  - **Central core of AGN with high sensitivity**
- **Phase referencing**
  - **Absolute position map**
  - **Long integration**
- **High sensitivity mapping**
  - **Large bandwidth observations ; optical fiber network**
  - **Example**
    - **0.2 mJy sensitivity**
    - **Several  $\times 10^4$  K brightness temperature for 10 hour observations**

# 8 GHz帯VLBI観測局

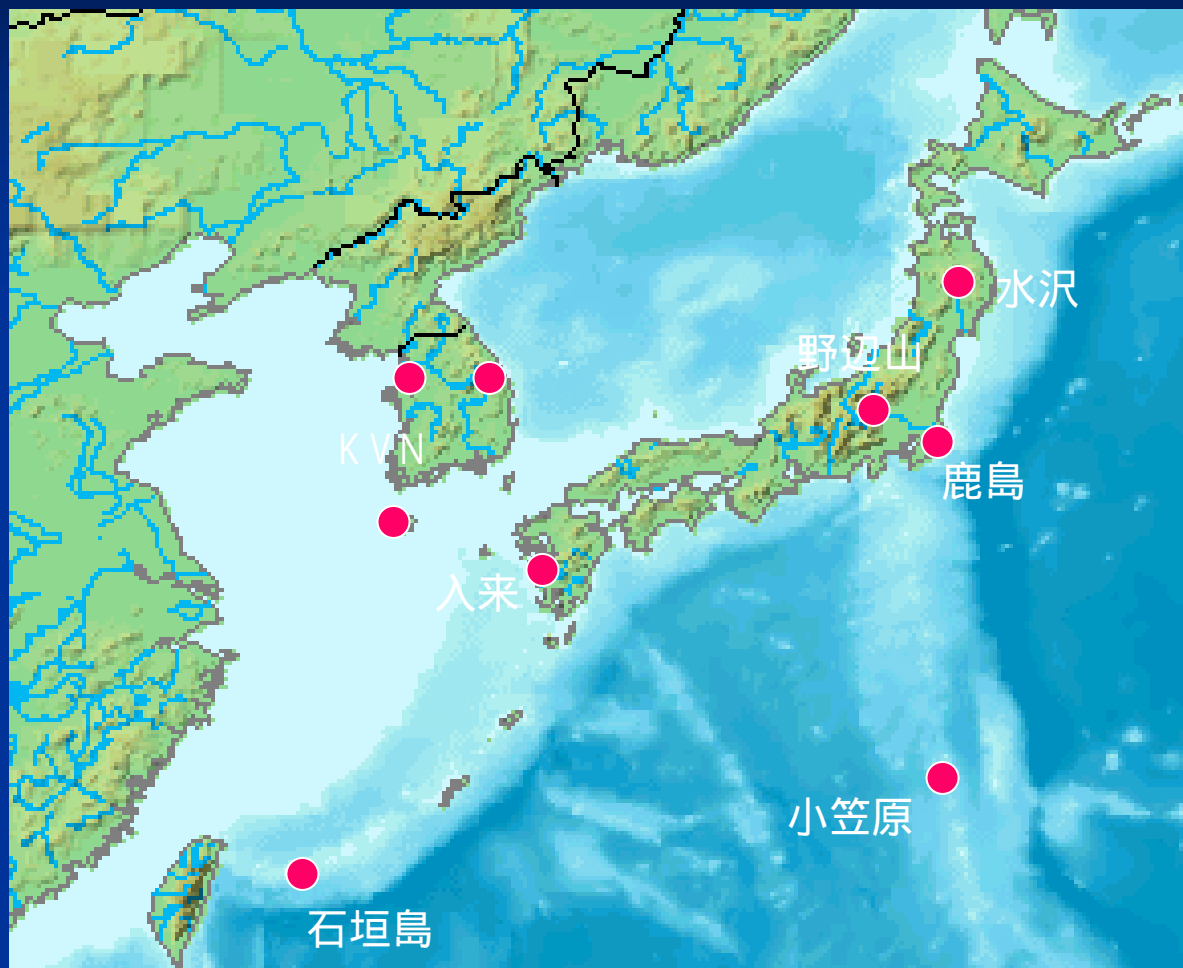




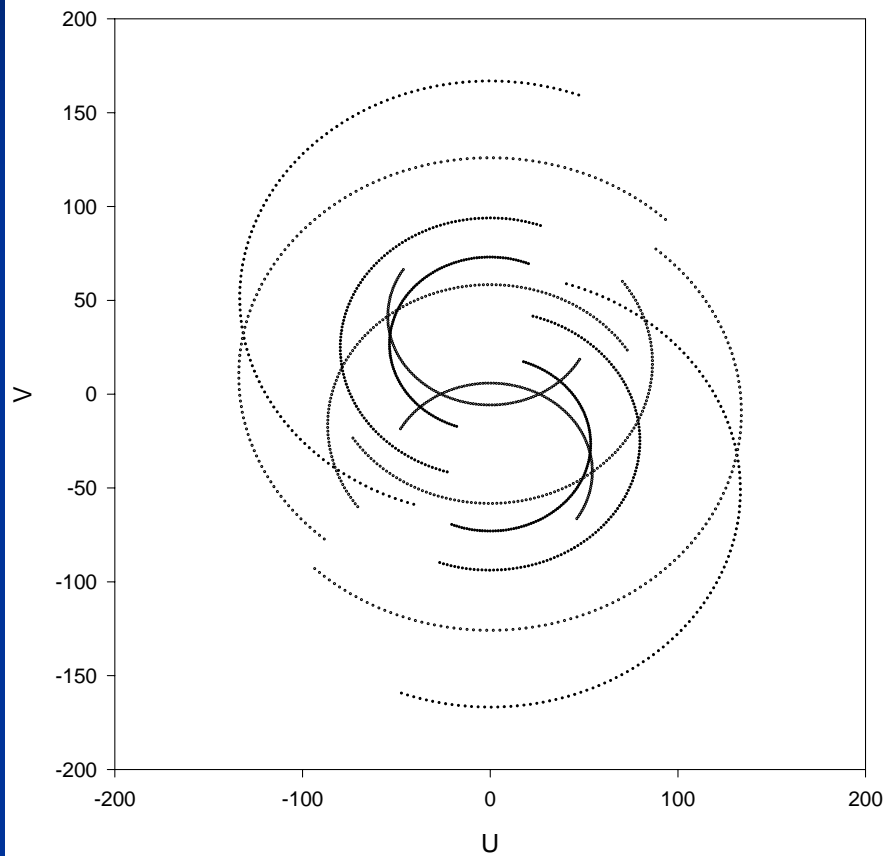
## 22GHz帯VLBI観測局



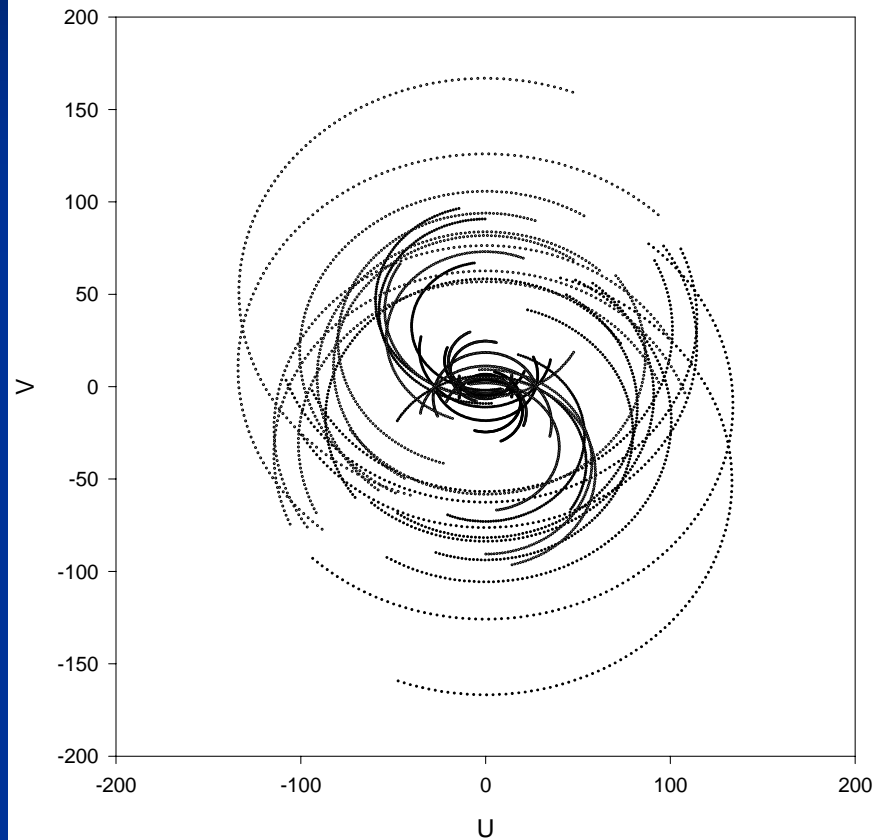
# 43GHz帯VLBI観測局



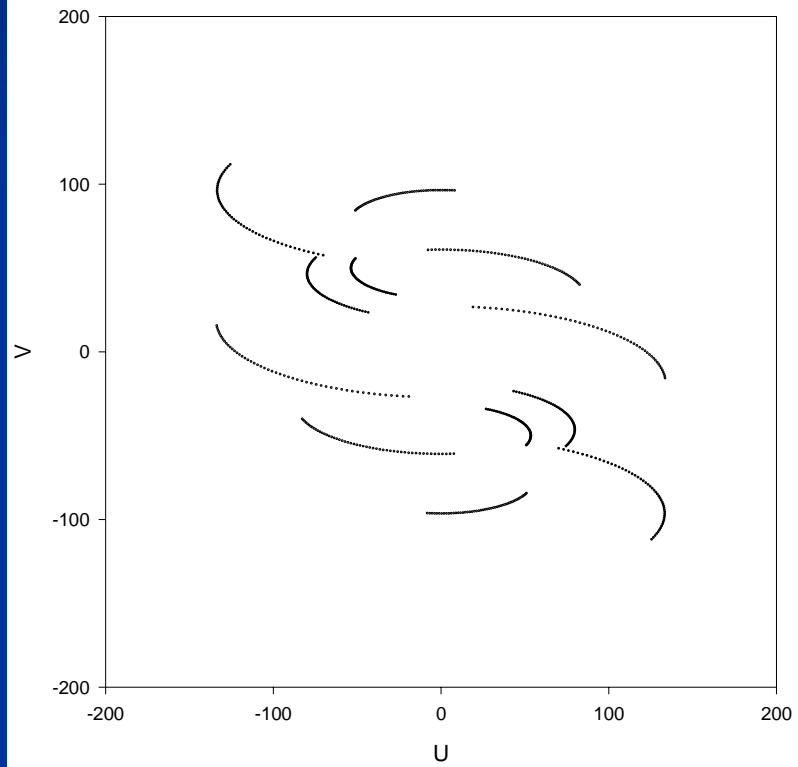
DEC=60 (VERA ONLY)



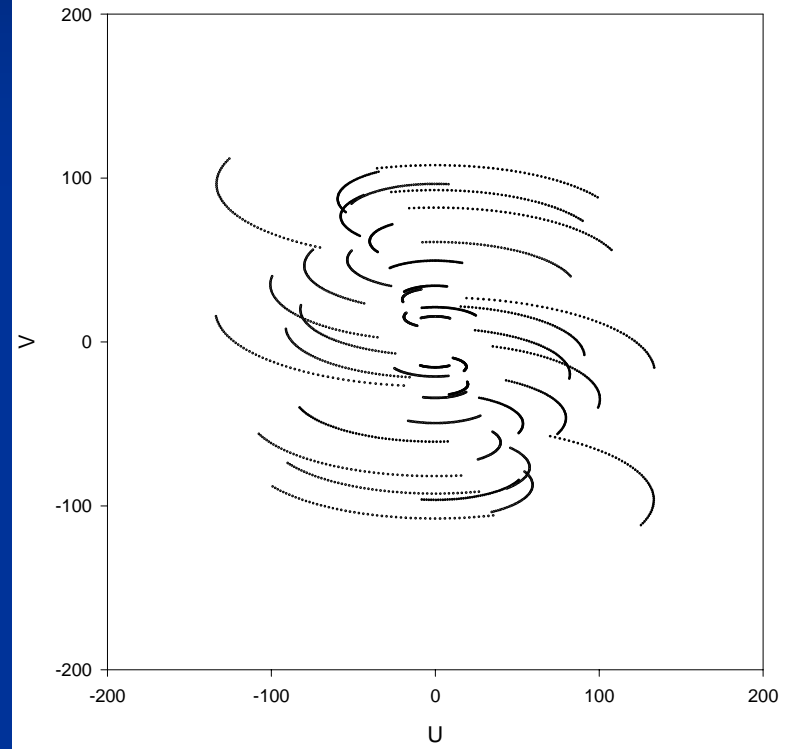
DEC=60 (VERA+KVN)



DEC= -20 (VERA ONLY)



DEC= -20 (VERA+KVN)



# Effective aperture area

effective aperture at 22GHz	m <sup>2</sup>
VERA	750
KVN	570
VERA+KVN	1320
VERA+KVN+Japanes	3900
EVN	4950
VLBA	3440
LBA	2170

# Requirements for correlator

- Number of stations ; 12
- Num. of Correlation ; 78
- Four Polarizations ; LL,LR,RL,RR
- Data rate ; 1Gbps -> 4Gsps 2bit
- Freq. resolution : 32 K points for maser ch.
  - 5 kHz (0.07 km/s) for 16MHz (220km/s) @22GHz
  - 10kHz for 32 MHz @43GHz
  - 20 kHz for 64 MHz @86GHz

# Requirements for correlator2

- For high rate observations
  - 16 Gbps x 6 stations
- Wide field and/or Multi-tracking points
  - Frequency resolution ; 10 k -> 18 arc-sec.
  - Data dump rate ; 4Hz -> 20 arc-sec.
    - 40Hz -> 18 arc-sec. for 5 km/s (VSOP2)
  - How many tracking points ?
    - 4 or 6