

Micro-Satellite Constellation for Earthquake Precursor Study

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Plausible atmospheric ionospheric precursors

F layer

Some of them are observable in satellite altitude.

Liu et al.
JGR (2006)

Nemec et al.
GRL (2008), JGR (2009)

Hayakawa et al.
JGR (2010)

Fujiwara & Kamogawa et al.
GRL (2004)

Es layer

E layer

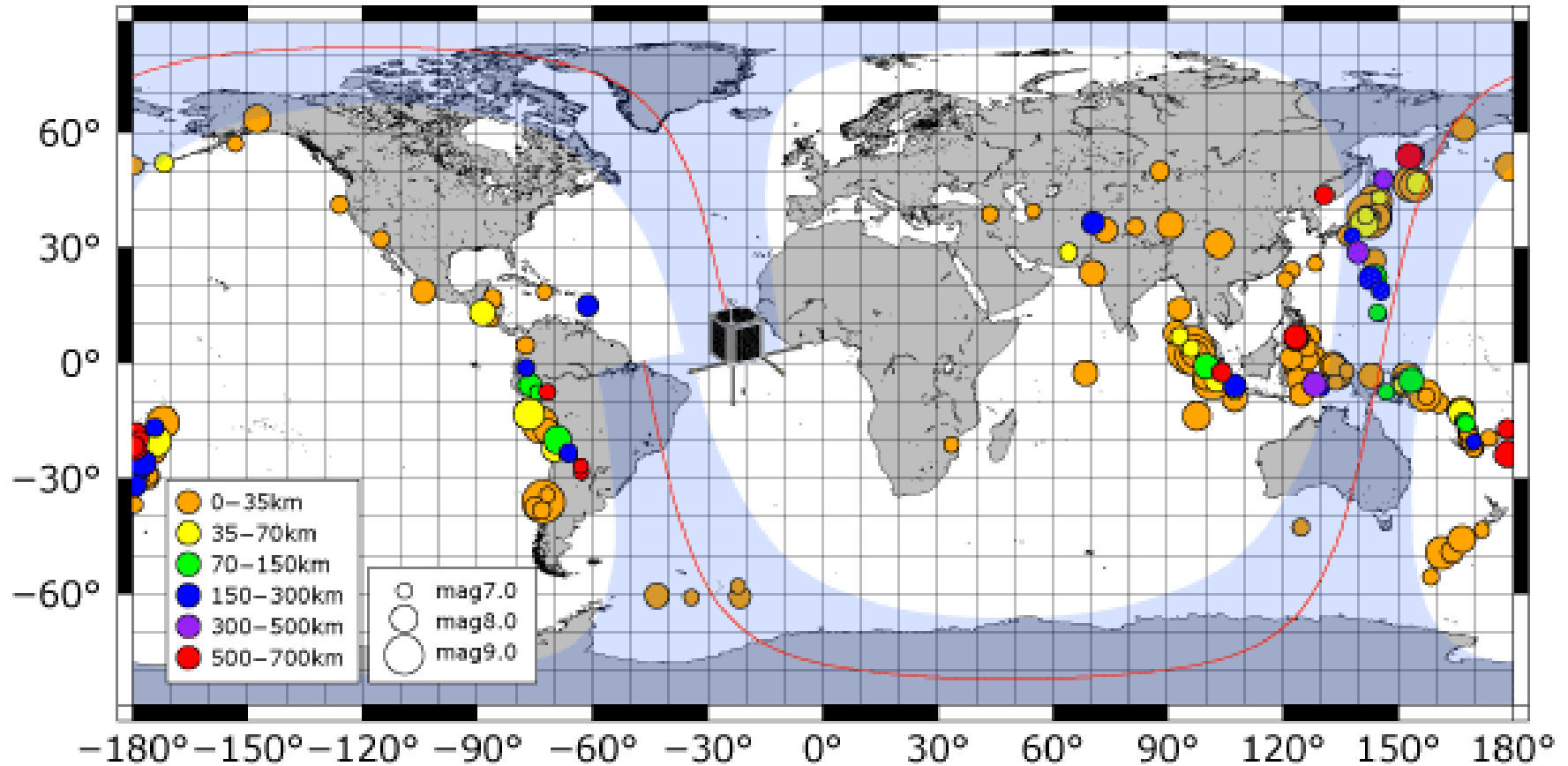
Atmosphere

Seismic
focus

Duration of precursor is longer than period of satellite orbit.

Kamogawa, Eos (2006) with adding recent reviews

Satellite observation is useful!

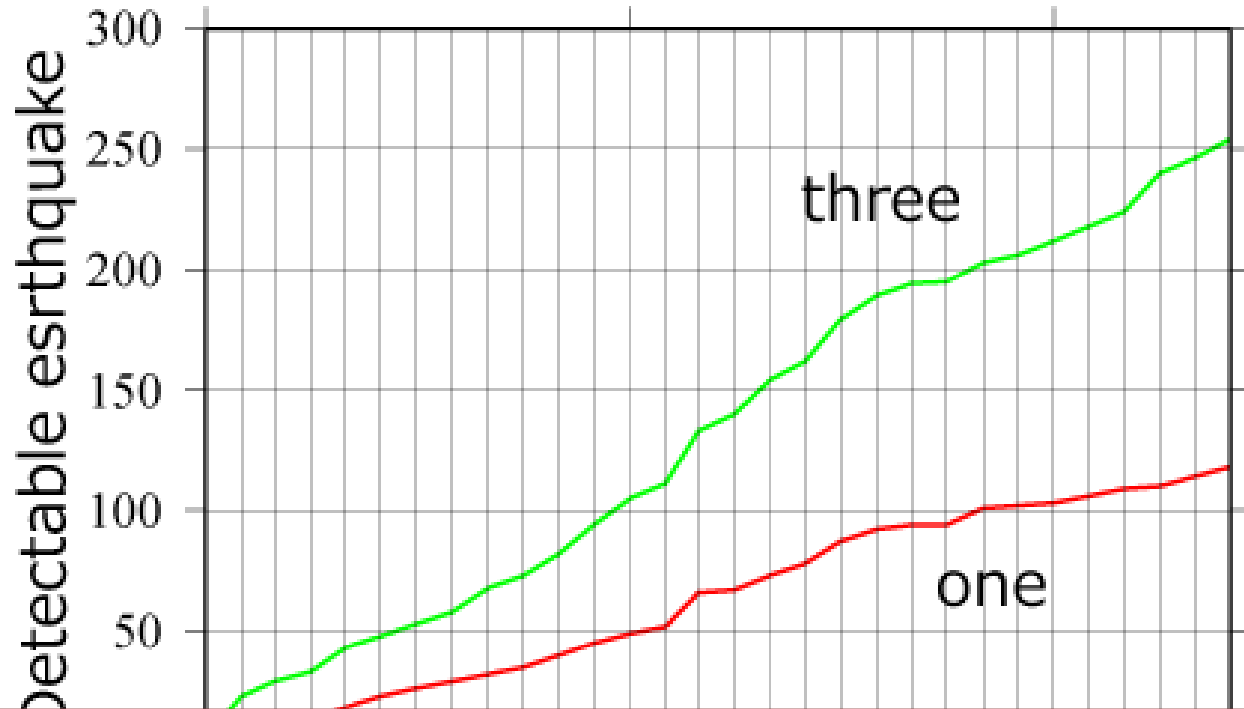


Satellites easily monitor global seismicity!

Number of detectable earthquake

ONE satellite
→118

THREE
satellites



Robust statistical verification!!

Time scale: 0~4 hours before the time of main shock

Spatial scale: about 500 km from the epicenter

Target magnitude: More than 5.5

We require ...

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1) mature technologies for continuous observation.

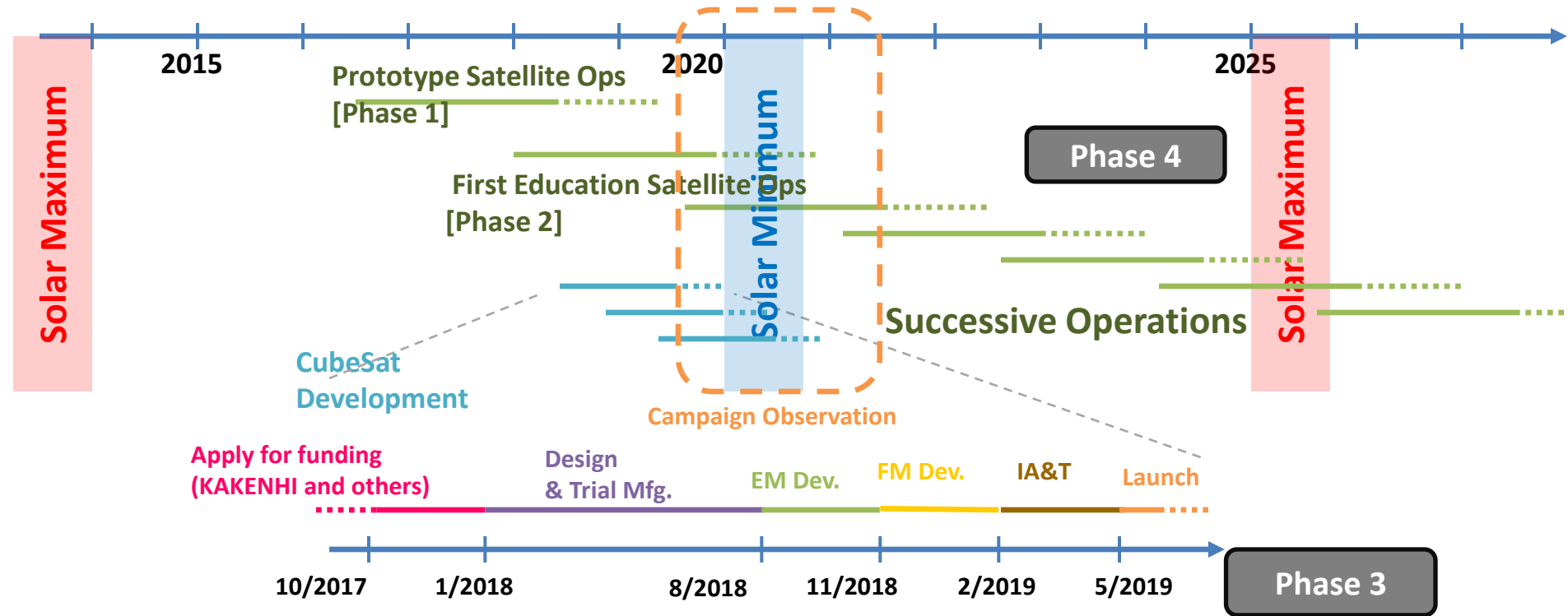
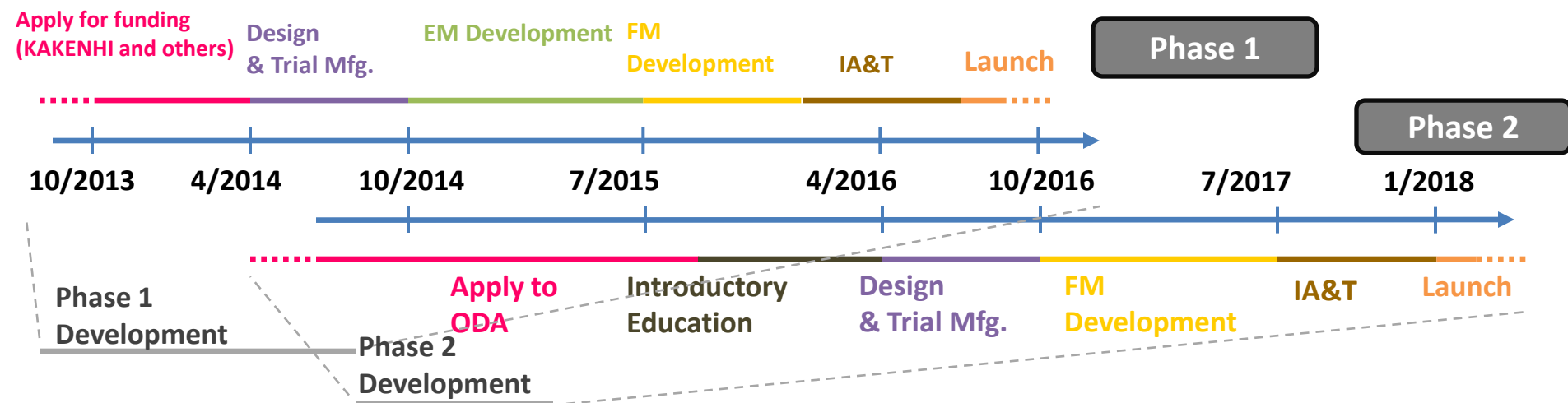
-> Dedicated nano-satellites to detect a precursor.

2) many events for statistical analysis, because of *no* physical mechanism and *tiny* signature.

-> Satellite constellation.

We propose UNISEC-type global collaboration.

Main Satellite Development



This project in UNISEC-Global gives us

- Chance to share the design and scientific data.
- Successive and continuous observation.

We will solve a global issue of earthquake mitigation!

Join our small discussion group!

Detailed information is shown in MIC2 book!

