

An Experiment of Earthquake Generation Process Prepared by Nature

- A Study of Seismicity Associated with by
Volcanic Stress Changes in and around the
Izu-Oshima Island -

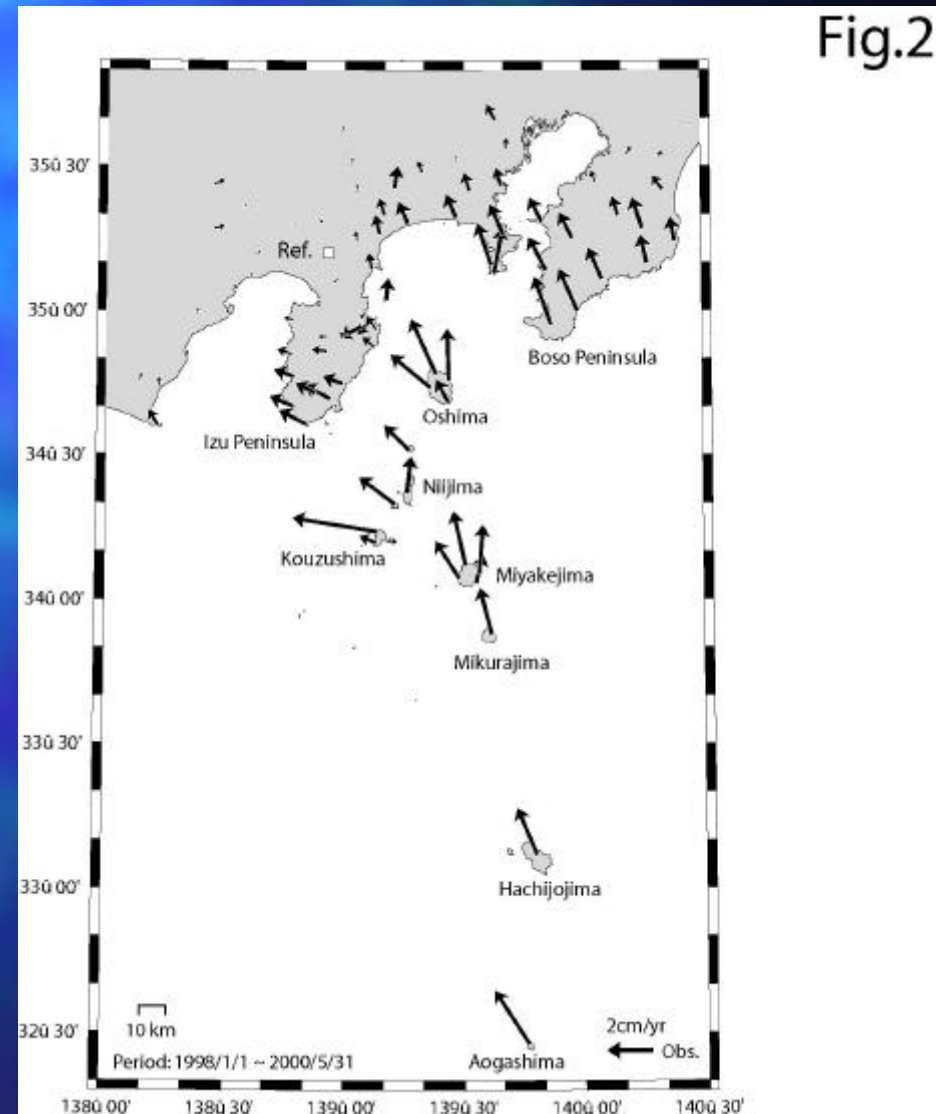
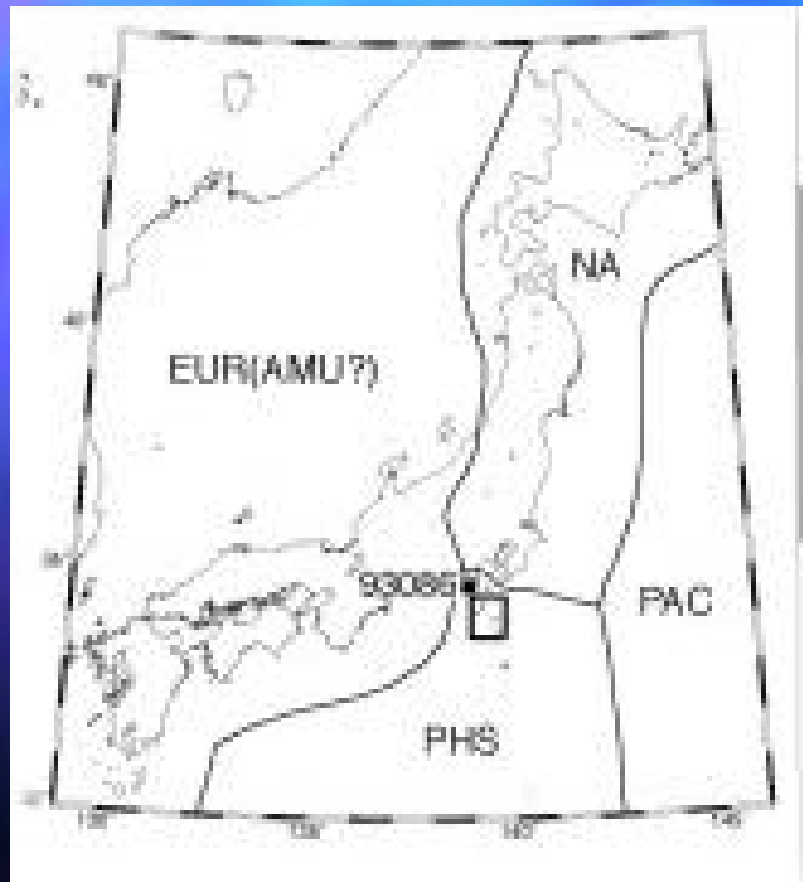
Makoto MURAKAMI
The Geographical Survey Institute

November, 2002
UJNR at Morioka Iwate, Japan

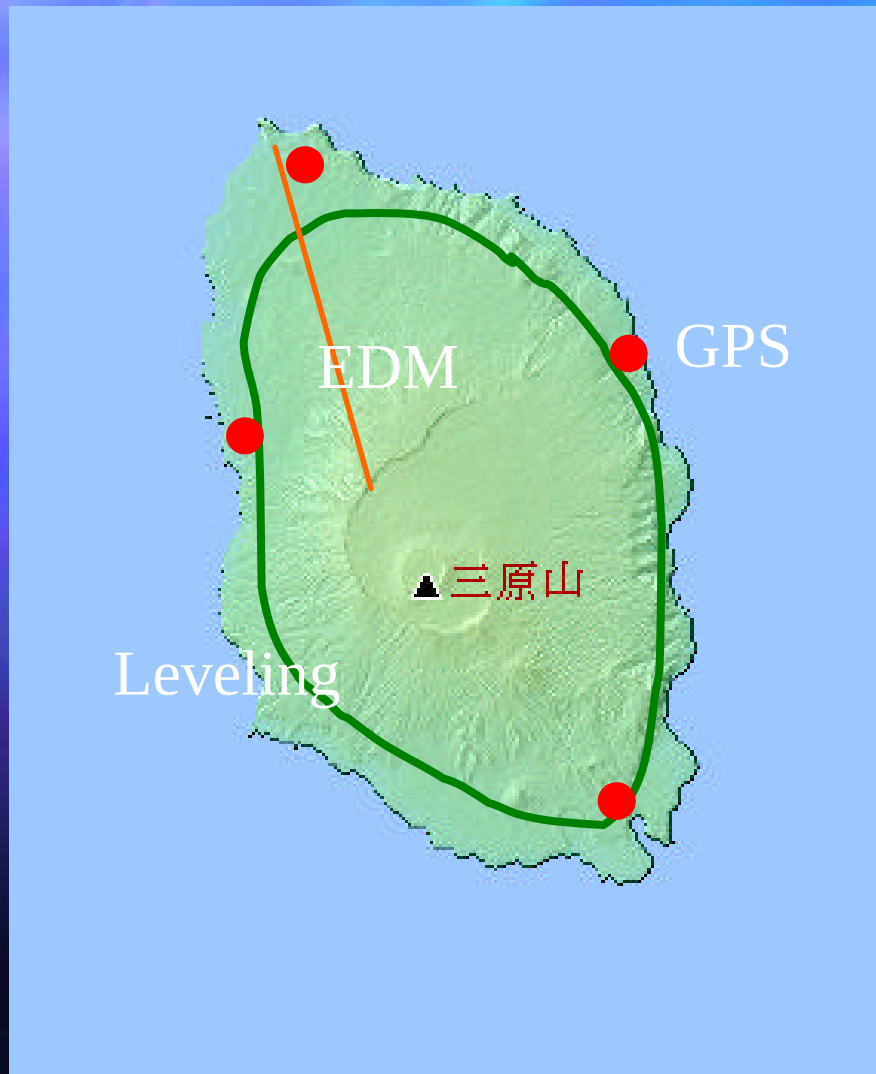
Outline

- A Natural Laboratory for Earthquake Production -- Izu-oshima
- Deformation, Seismicity
- Rich Data Set of Other Relevant Data: Geology, Structure, Geomagnetism, etc.

Tectonic Setting of Izu-Oshima

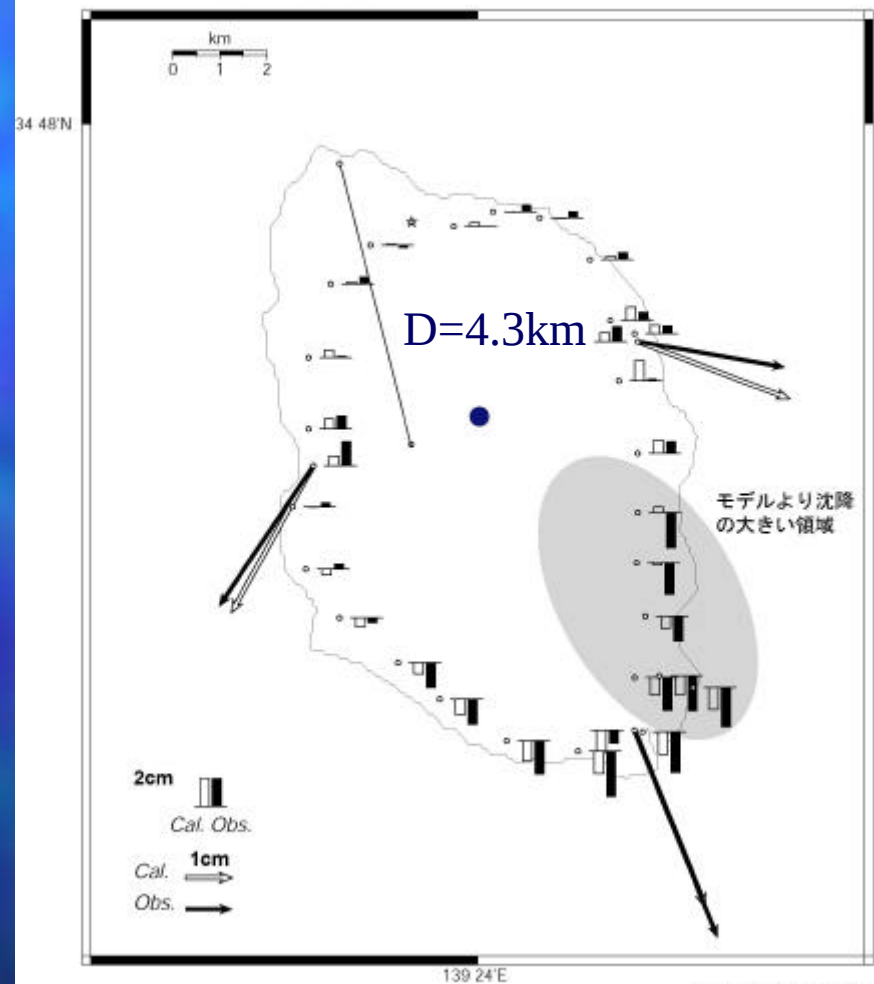


Crustal Deformation of Oshima



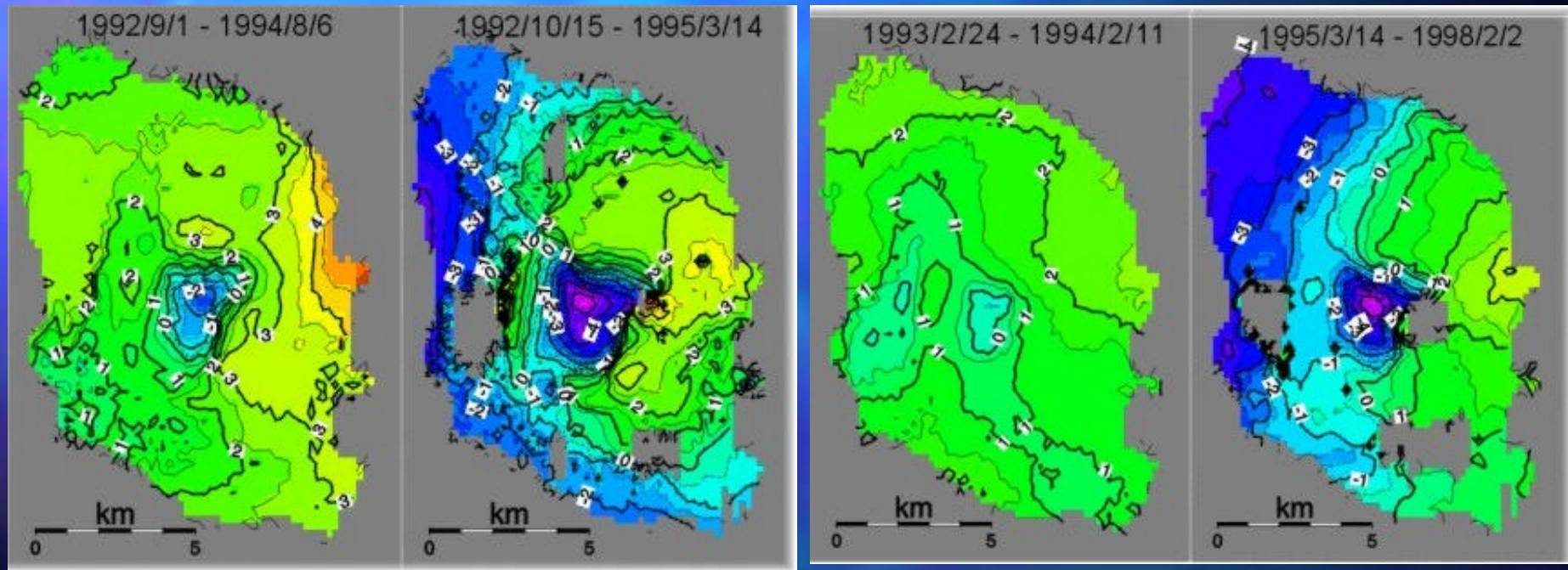
GPS、水準および辺長測量による伊豆大島の膨張モデル

Period1:1996/09/01 - 1996/09/15
Period2:2000/08/01 - 2000/08/15

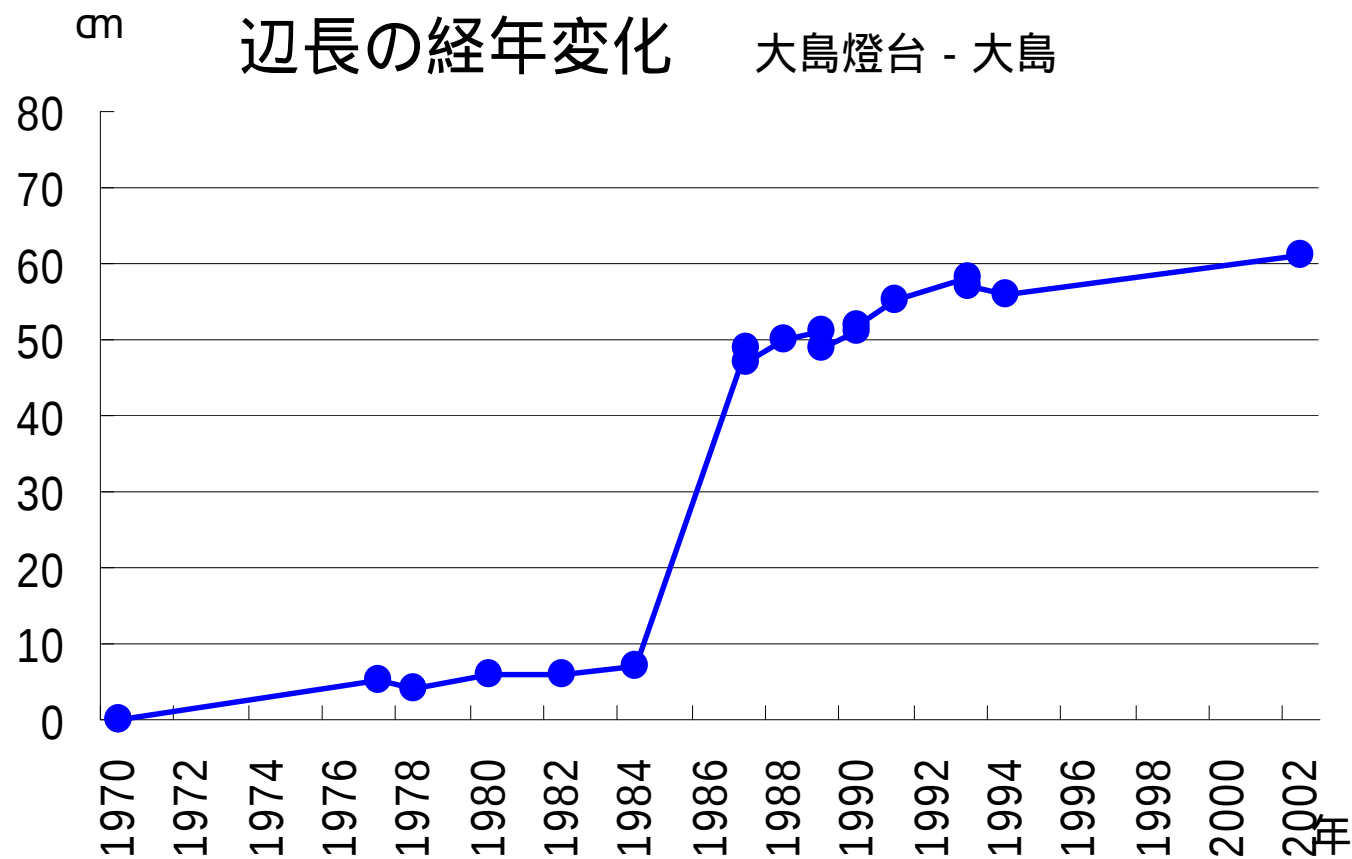


Lat=34.74 Lon=139.40 D=4.3km Inflation=5.6million cubic meter

JERS-1 InSAR



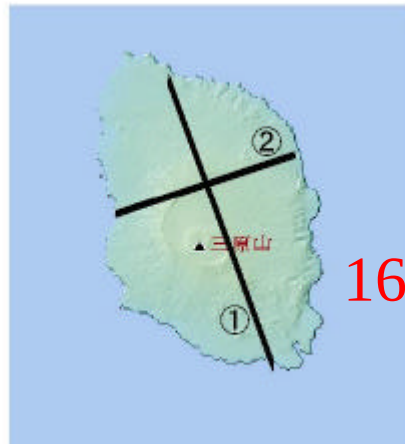
EDM since 1970



Continuous Inflation

Episodicity of Crustal Deformation

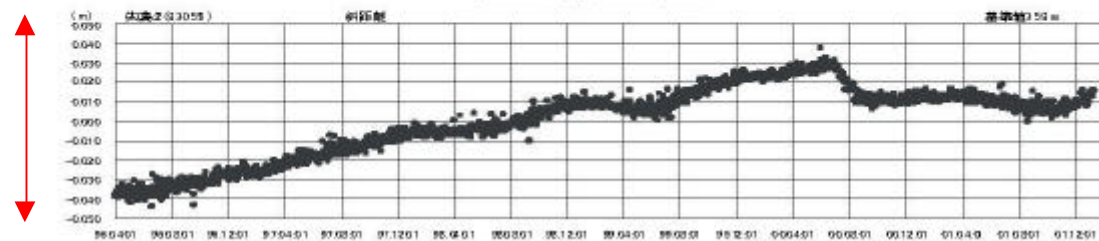
伊豆大島島内基線の時間変化



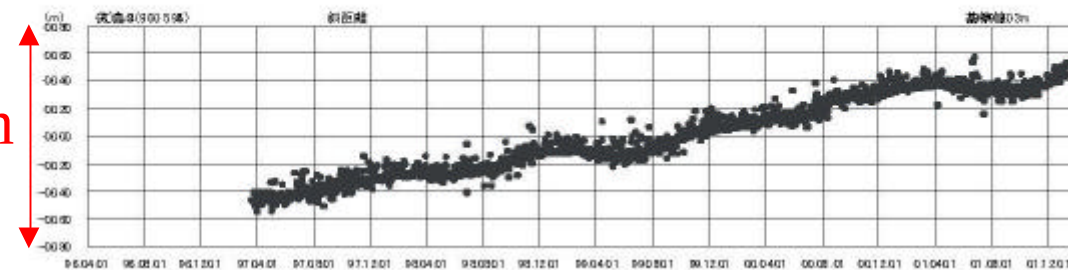
10cm

16cm

① 南北基線長時系列



② 東西基線長時系列



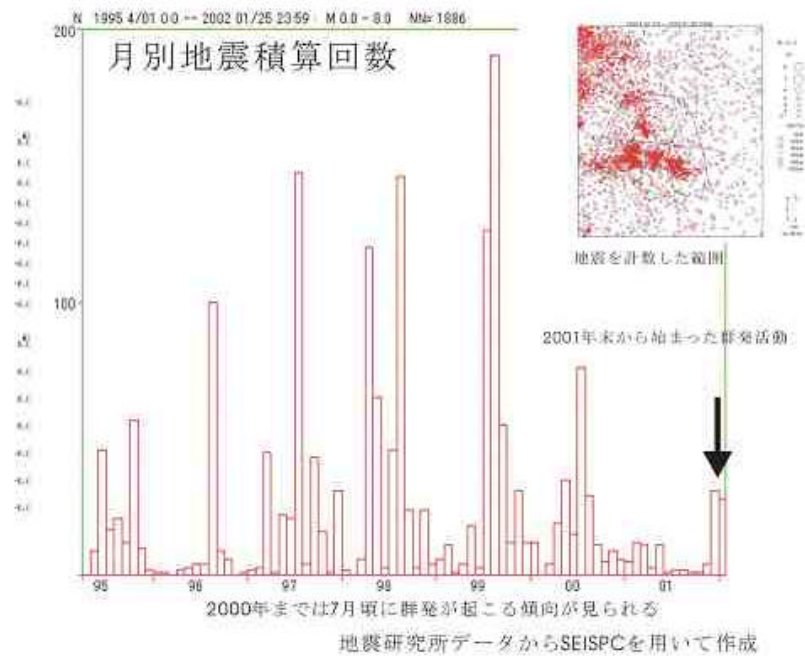
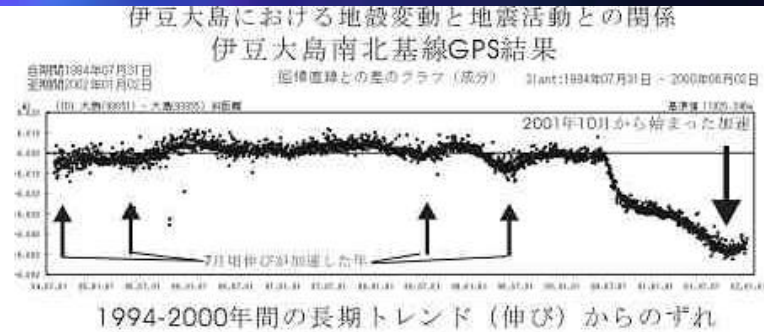
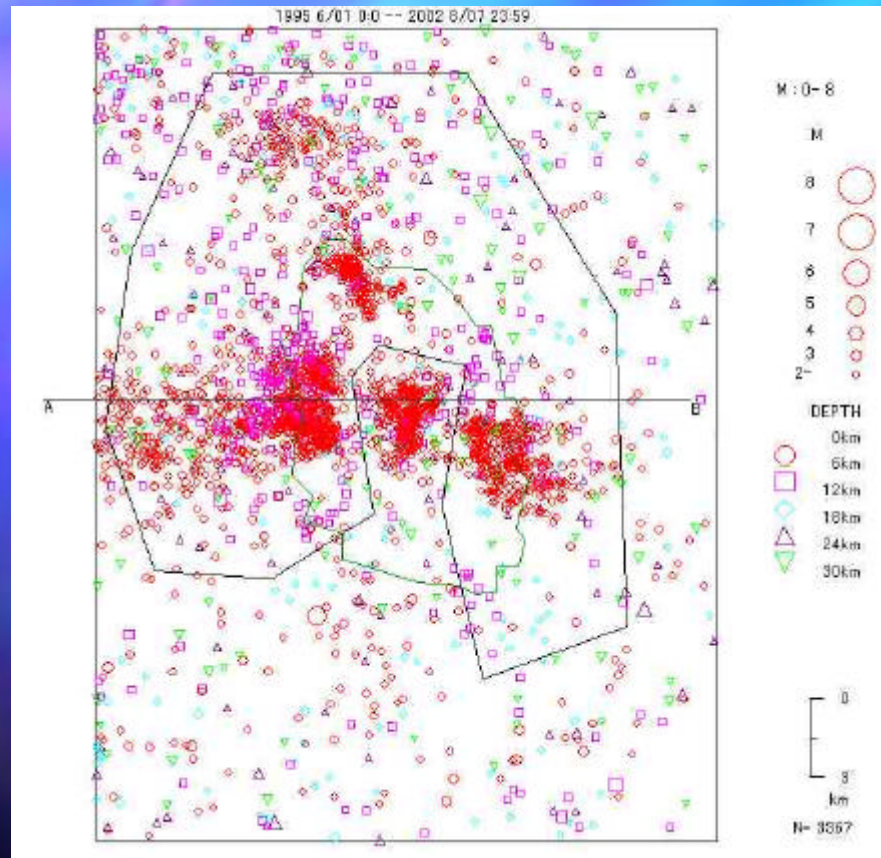
1996/04

2001/12

Summary of Crustal Deformation

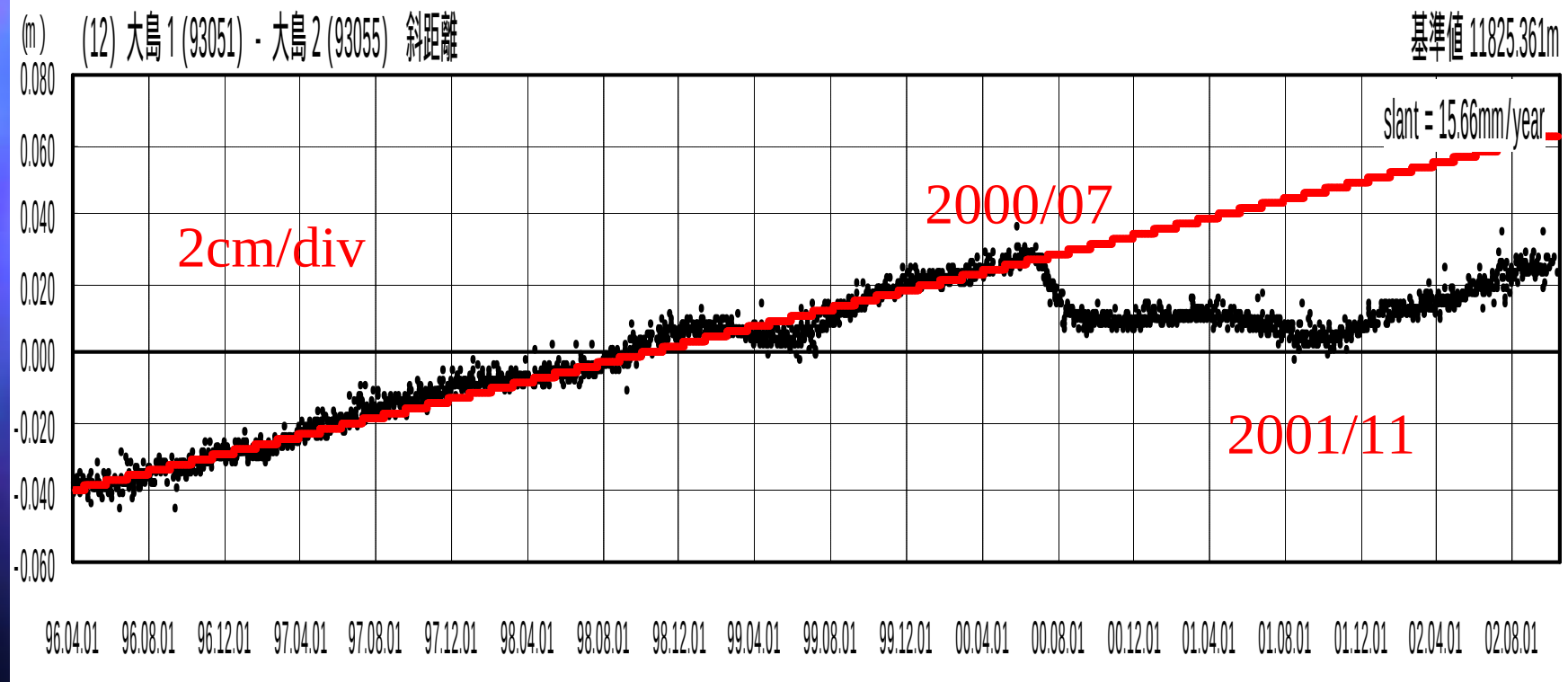
- Inflation of the Island
 - Inflation of Magma Reservoir
 - Episodicity (Seasonality?) Seismicity
- Subsidence of Caldera Region
 - Tension Field
 - + Dikes (Fissure series A and B) Subduction
- Subsidence of NS
 - Possible Dike formation during 1986 Erptn.
- Subsidence of 1986 C Fissure

Episodicity of Seismicity and Deformation

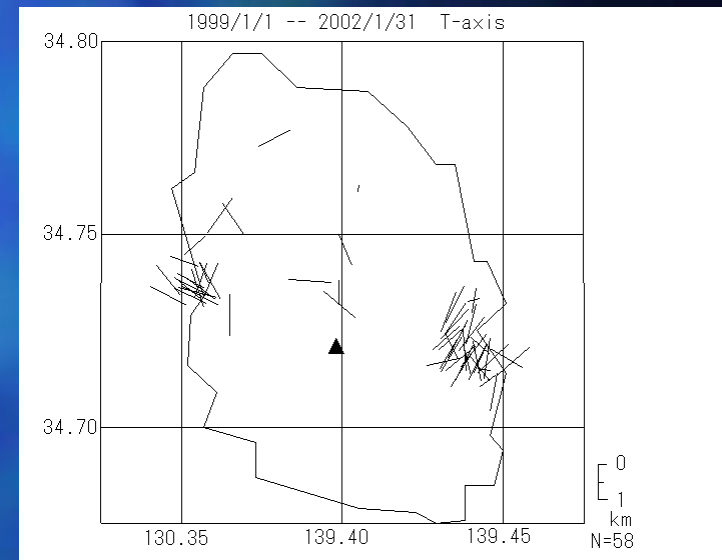
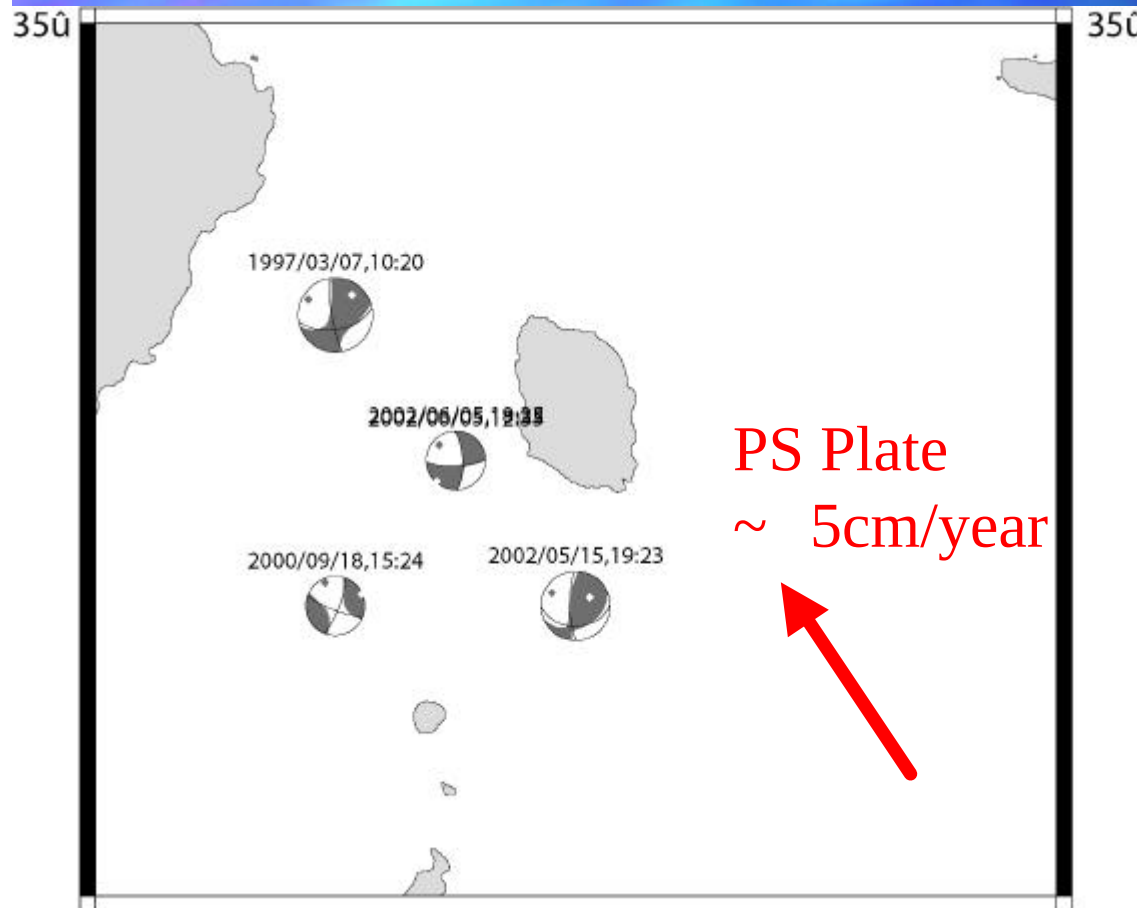


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Baseline Change



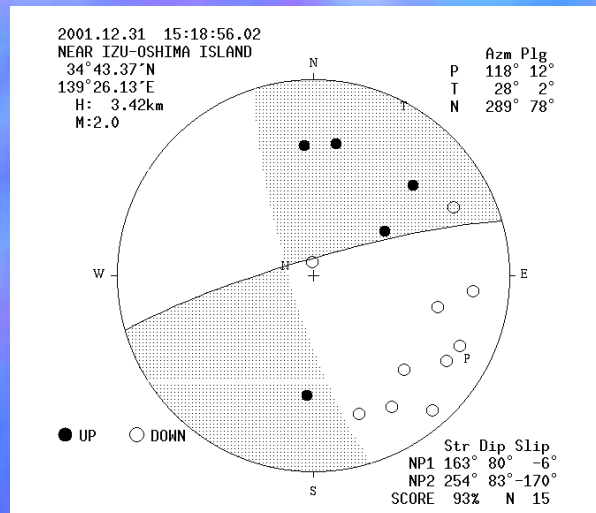
Focal Mechanisms



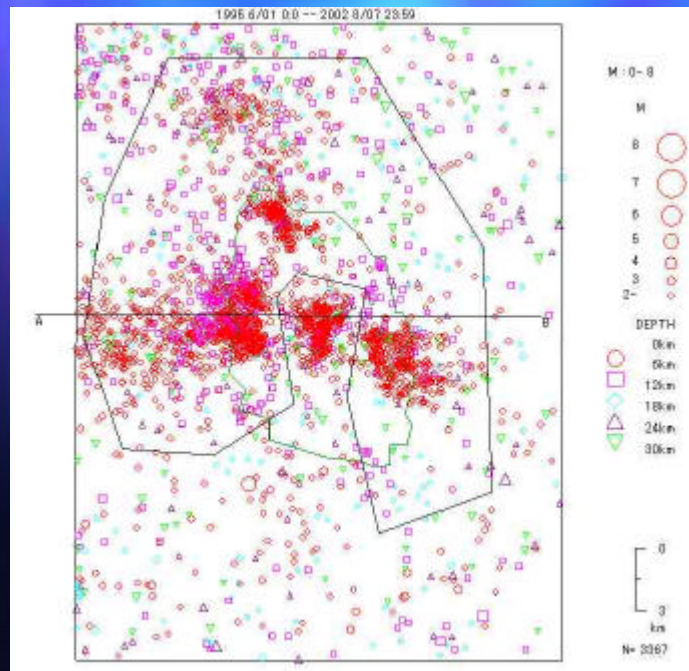
T axis Distribution

After A. Takagi (MRI)

NIED

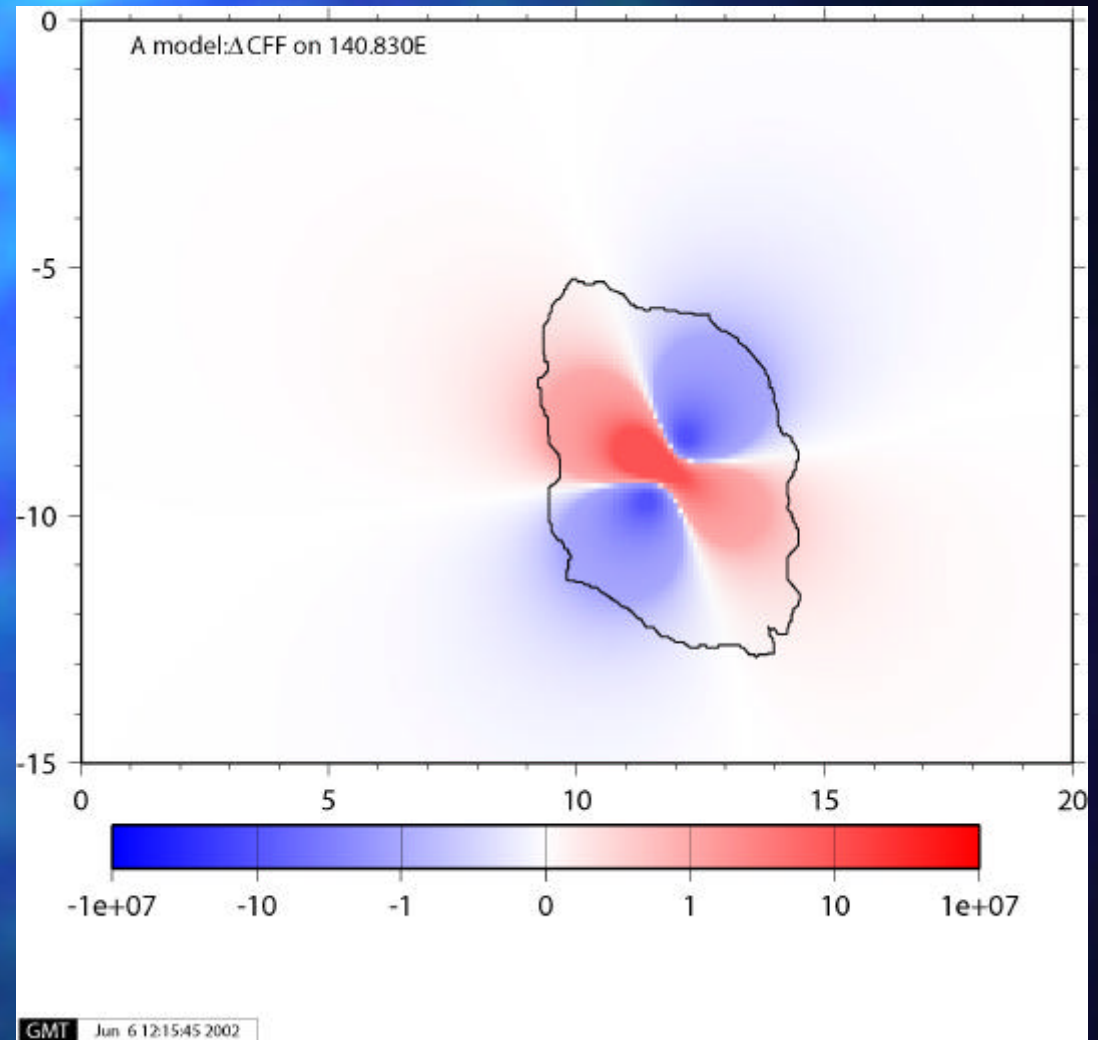


Mechanism



Seismicity

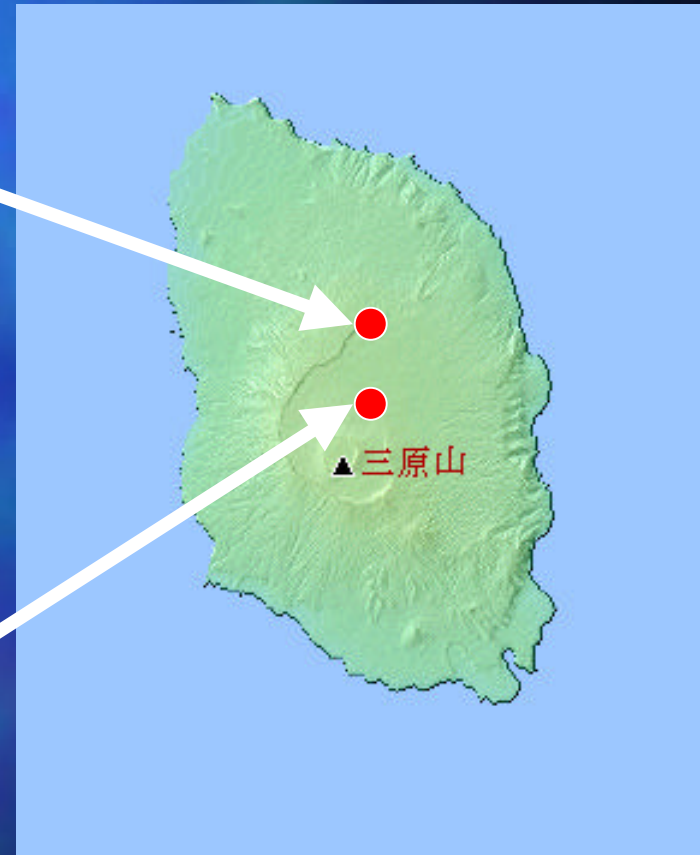
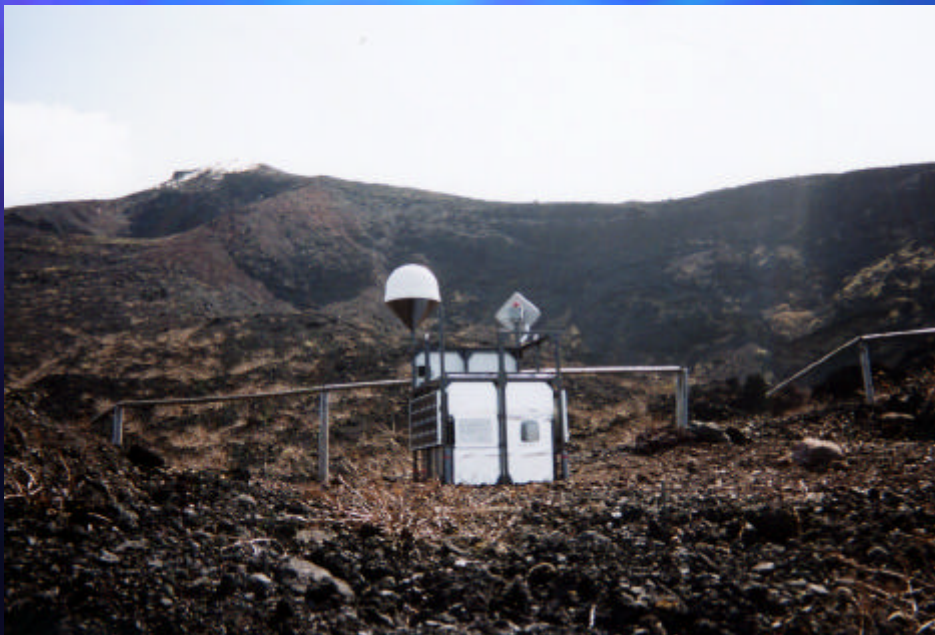
ΔCFF



Computed ΔCFF

New GPS Permanent Sites in Oshima

March 2002



Summary

- Izu-Oshima Interesting Test Field
- Seismicity Deformation
- Rich Data: Tectonic Setting, Geology, Volcanology, 3D Structure