



Universidad de Colima



***Cities on Volcanoes 7  
Volcano Monitoring  
Workshop  
17 Nov. 2012***

# Schedule

Time	Topic	Speaker
8:30	Introduction to the workshop	Jeff Johnson, Nick Varley
9:00	Understanding volcanic systems through monitoring	Eliza Calder, University at Buffalo, USA
9:55	Remote sensing SO <sub>2</sub>	Simon Carn, Michigan Tech., USA
10:50	BREAK	
11:05	Remote sensing of ash & thermal	Simon Carn & Fred Prata, Norwegian Institute for Air Research
12:00	Seismology	Gregory Waite, Michigan Tech., USA
12:55	Ground-based thermal & gas monitoring	Nick Varley, Universidad de Colima
13:50	LUNCH	
15:00	Infrasound monitoring	Jeff Johnson, Boise State University, USA
15:55	Deformation	Halldor Geirsson, Pennsylvania State University, USA
16:50	BREAK	
17:05	Crater lake and spring water monitoring	Orlando Vasselli, Università degli Studi di Firenze, Italy
18:00	Volcano unrest: an integrated ground-based geodetic perspective	Jo Gottsman, Bristol University, UK
18:35	CONCLUSIONS	Panel

# What is volcano monitoring?

When will the eruption occur?  
What will be the hazards?

Simple observation



Complex network of systems with  
telemetry

Depends upon:

- Hazards presented by volcanic
- Frequency of historic eruptions
- Economic situation in region
- Vulnerable population

# History

- ▶ First monitoring – Vesuvius 1856, then Usu, Japan in 1910
- ▶ Now nearly 200 volcanoes have seismic monitoring (one third of those with historic eruptions)
- ▶ Volcán de Colima – started in 1987



# Objectives of monitoring

- ▶ Detect eruption precursors
- ▶ Characterize “unrest”
- ▶ Predict the magnitude of an eruption or likely scenarios
- ▶ Identify and quantify hazards during or after an eruption
- ▶ Follow the evolution of activity
- ▶ Define the “end” of an eruption



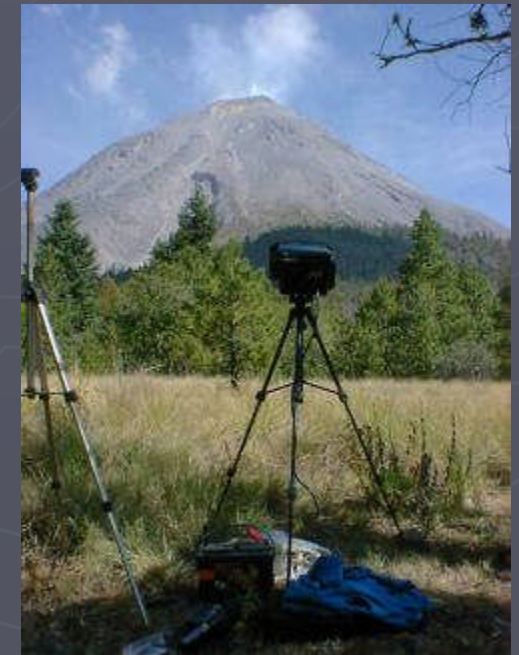
Variocam infrared camera



Measurement of SO<sub>2</sub> flux



Installing infrasound station



Thermal sensor installation

Definition of alert system

Hazard maps

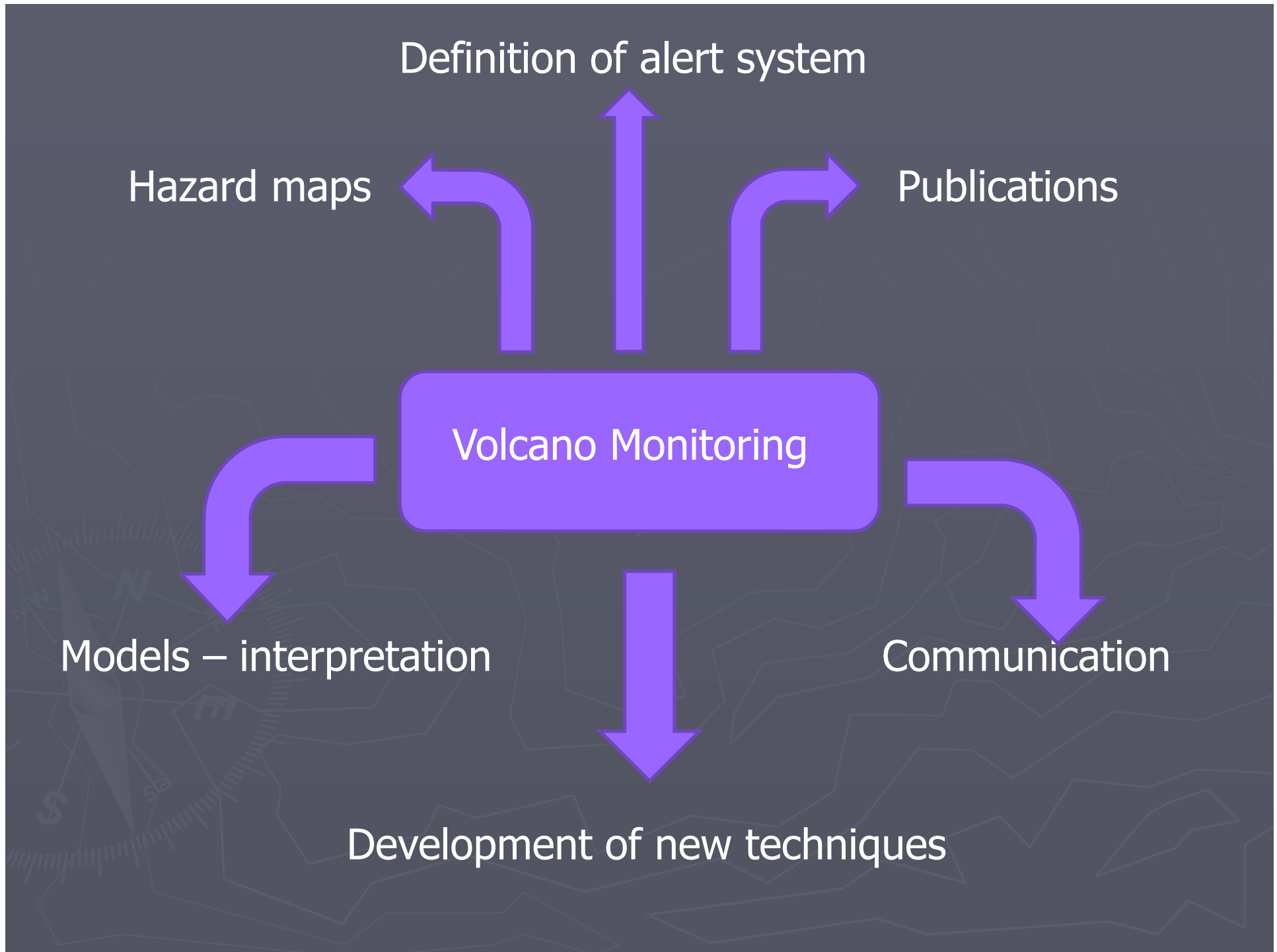
Publications

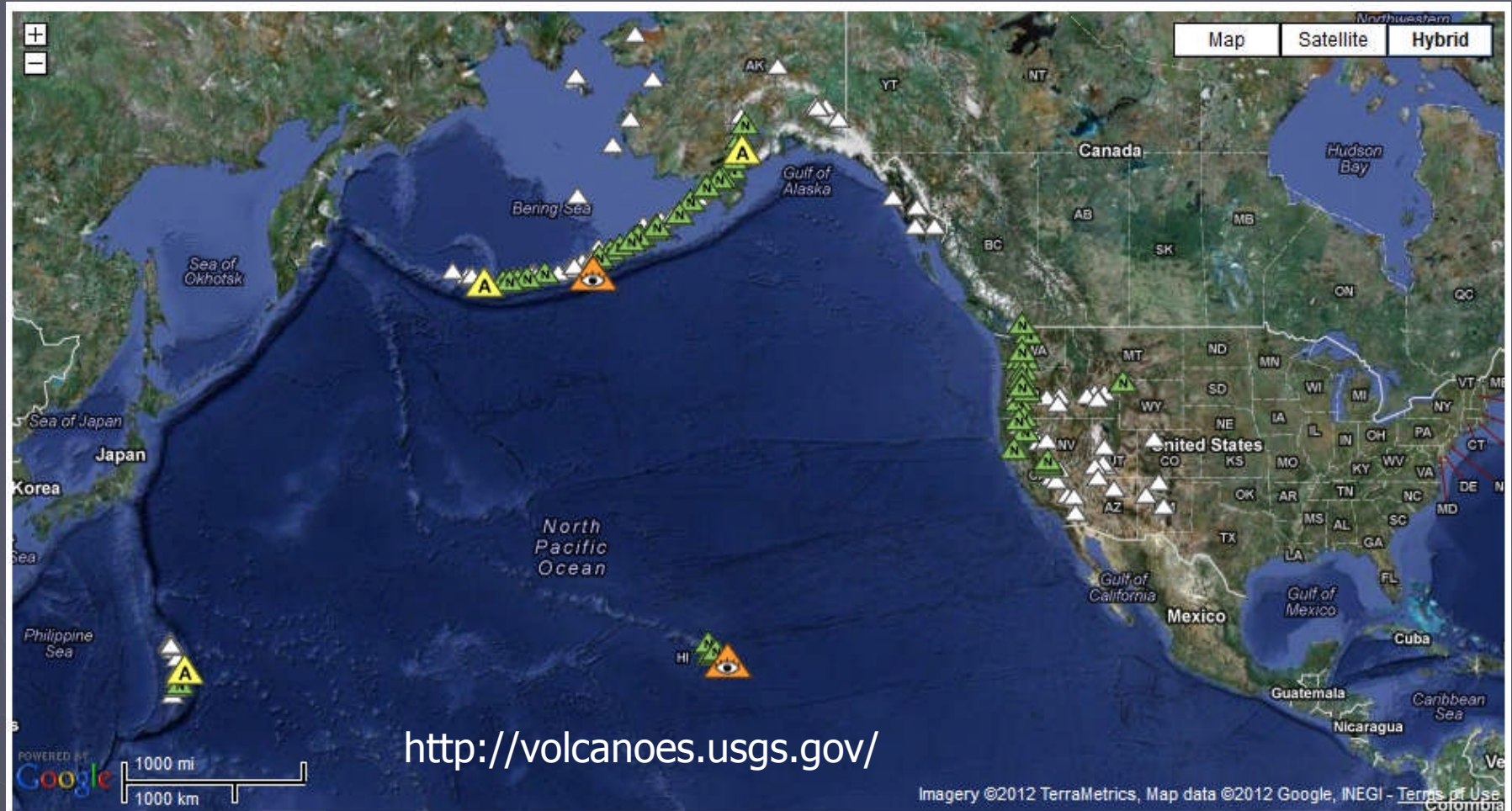
Volcano Monitoring

Models – interpretation

Communication

Development of new techniques

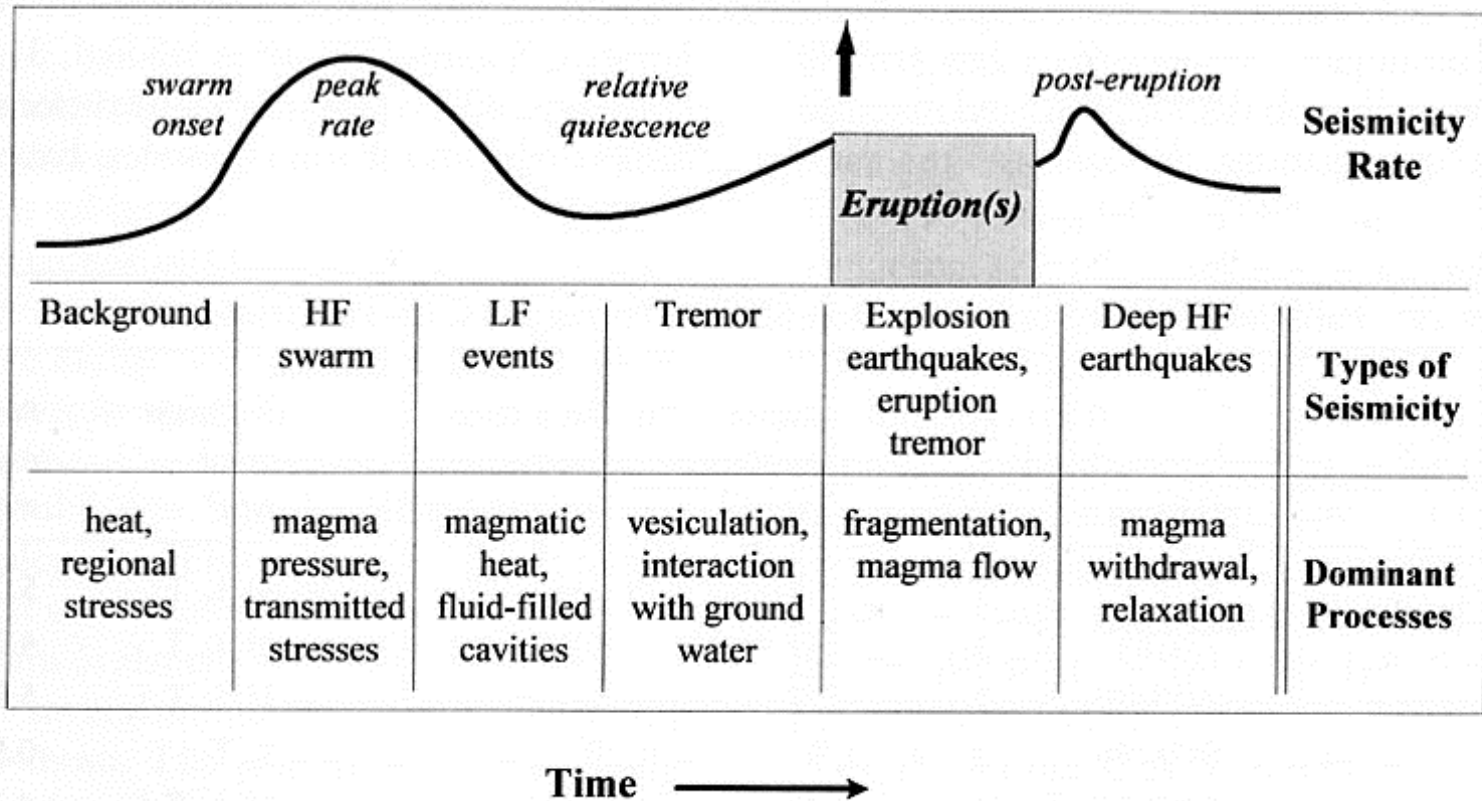




- Accessibility of data
- Is this always a good thing?



## Generic Volcanic Earthquake Swarm Model



Generic models seldom work

# Role of the actors



## ► Scientists

- Volcano monitoring – instruments
- Study of historic eruptions - geology
- Studies of risk and vulnerability
- Interpretation of data – Predict scenarios and the hazards
- Communication

## ► Protección Civil

- Plan actions based on recommendations from the scientists

## ► Politicians

- Make decisiones

26 June 2004