



“Colima volcano exercise: planning, development and lessons learned”



**VUELCO conference
Barcelona (Spain), 7-8th March 2013**



PROTEZIONE CIVILE
Presidenza del Consiglio dei Ministri
Dipartimento della Protezione Civile

Stefano Ciolli – Italian Department of Civil Protection

THANKS!

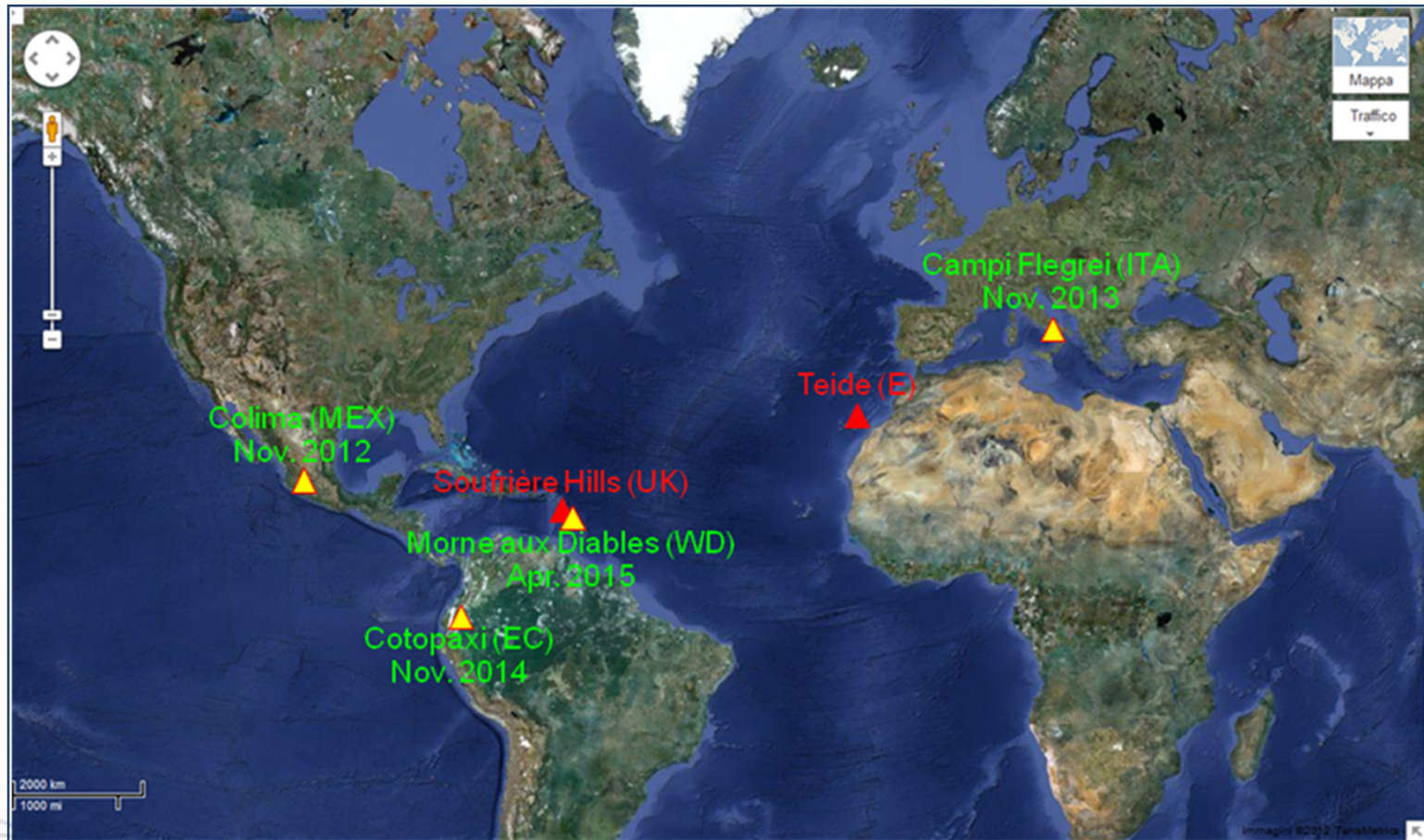
VUELCO
volcanic eruption unrest management monitoring assessment
short-term processes subsurface mitigation effective
eruption consortium processes knowledge uncertainty
signals scientific reliable today forecasting imminent data
causative mechanistic mitigation effective
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Work Package 9: *Decision making and unrest management*

Task 9.6: *Simulation of unrest and decision making*

TARGET VOLCANOES



INVOLVED INSTITUTIONS

Mexican involved institutions and committees:

1. Mexican National System of Civil Protection (MNSCP).
2. State of Colima Civil Protection System (SCCPS).
3. State of Jalisco Civil Protection (JCV)
4. National Center for Disaster Prevention (CENAPRED)
5. Universidad Nacional Autónoma de México, Mexico (UNAM)
6. University of Colima (UC)
7. Colima Volcanic Observatory (CVO)
8. Scientific Committee for Colima Volcano (SCCV)

International involved institutions:

9. University of Bristol (UNIVBRIS)
10. University of Leeds (UNIVLEEDS)
11. Agencia Estatal Consejo Superior de Investigaciones Científicas, Spain (CSIC)
12. Istituto Nazionale di Geofisica e Vulcanologia, Italy (INGV)
13. Dipartimento della Protezione Civile, Italy (DPC)
14. Ludwig-Maximilian University of Munich, Germany (LMU)
15. Centre National de la Recherche Scientifique, France (CNRS)
16. Seismic Research Centre- University of West Indies, Trinidad and Tobago (SRC-UWI)
17. Instituto Geofísico de Escuela Politécnica Nacional, Ecuador (IGEPN)



UNIVERSIDAD DE COLIMA



INGV



CSIC

UWI



PROTEZIONE CIVILE
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PREPARATION



COLIMA VOLCANO EXERCISE PLAN

17th – 24th
November 2012



*Volcanic Unrest in Europe
and Latin America:
phenomenology, eruption
precursors, hazard
forecast, and risk
mitigation*

WP 9: Decision-making
and unrest management

Task 9.6: Simulation of
unrest and decision making



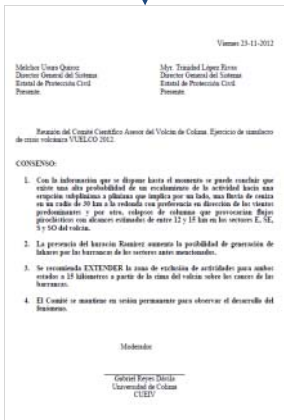
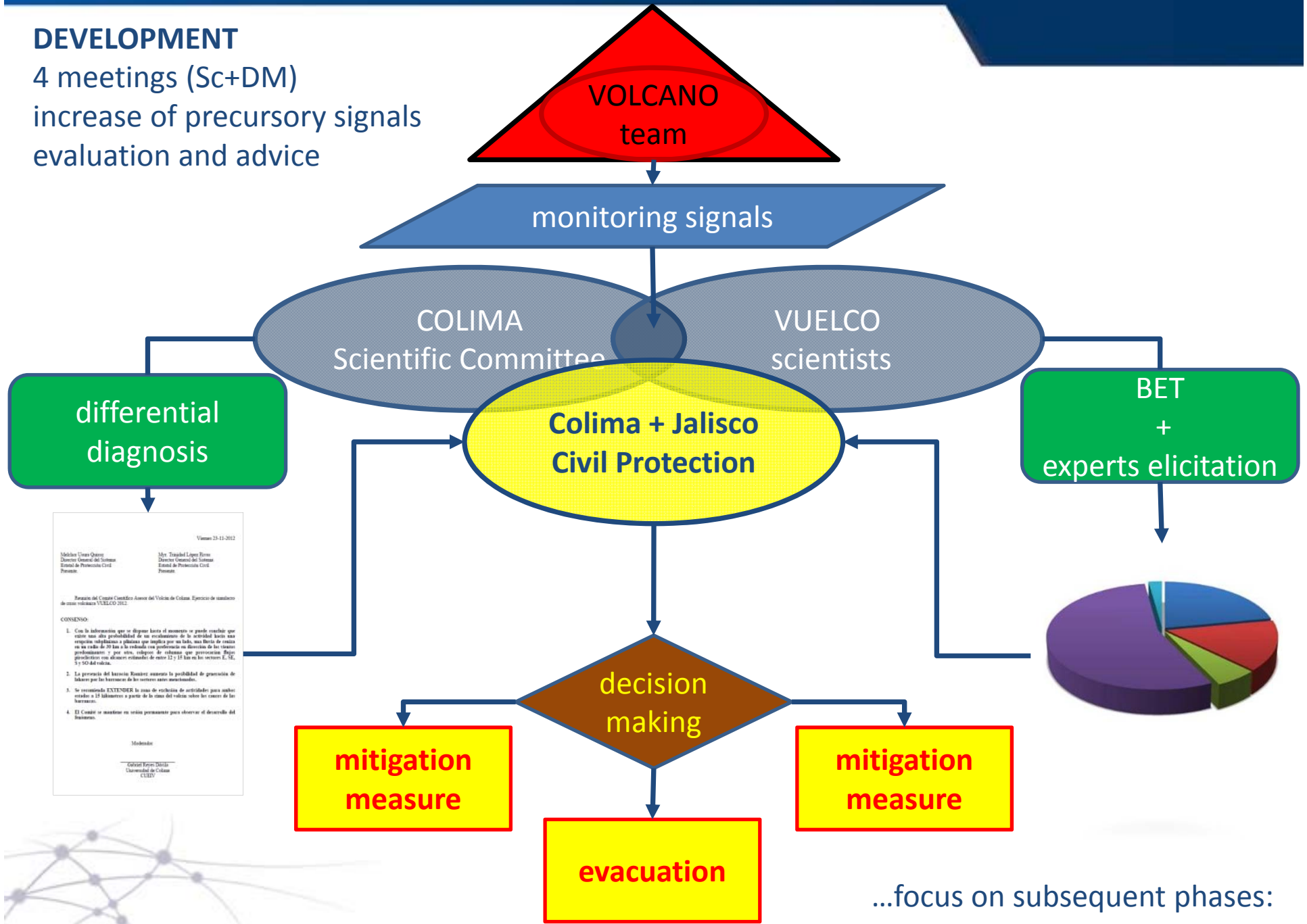
EXERCISE MAIN GOALS:

- Explore the applicability and helpfulness of products (especially probabilistic models and communication protocols) developed within the project, to the decisional-operational chain in an unrest crisis, with reference to the already existing in use at Colima;
- Scrutinize the process of: analyzing precursory signals, defining most likely scenarios, communicating between scientists and civil protection, making a decision, communicating to media and population;
- Observe the risk perception of the European and the Latin-American participants;
- Identify strength and weakness points;
- Identify the users' needs in different phases in order to find how to improve the system;
- Analyze Civil protection operational activities (procedures, means, timing, functionality of emergency areas, evacuation routes, operational centers, radio communication, displaying of forces, relief organization, etc.).



DEVELOPMENT

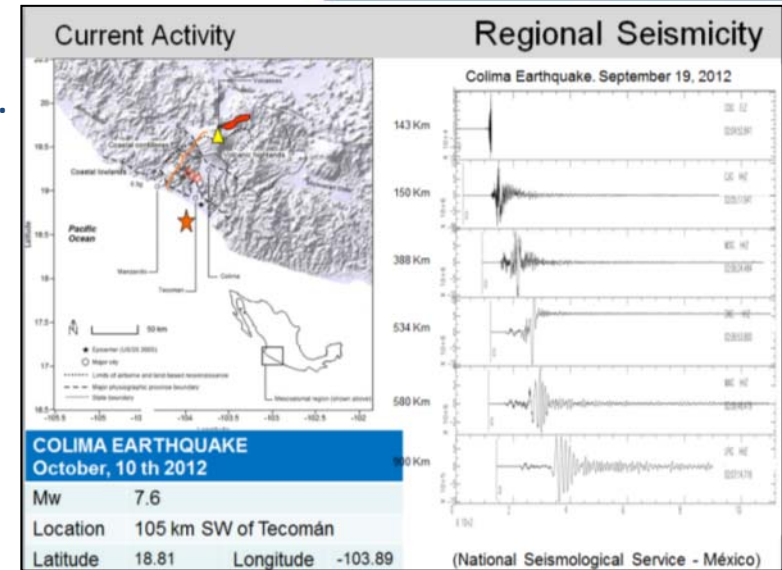
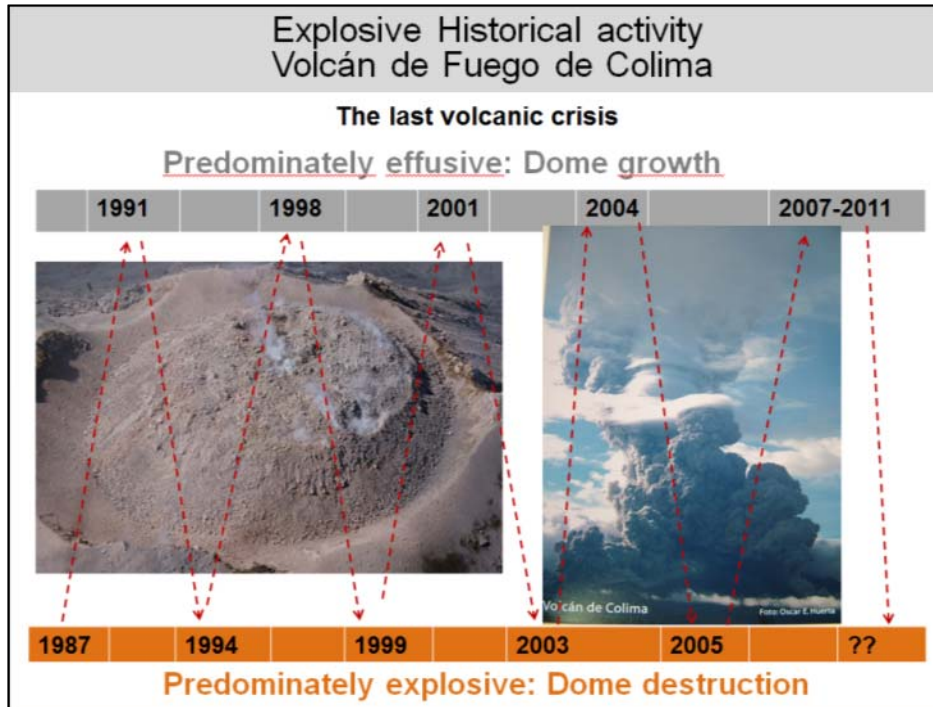
4 meetings (Sc+DM)
increase of precursory signals
evaluation and advice



...focus on subsequent phases:

EXERCISE PHASES:

A. The analysis and interpretation of precursory signals.



...see UNAM presentation



B. The elaboration of scenarios and the advice-giving.

Possible scenarios defined:

1. Effusive
2. Explosive (sub-Plinian, Plinian)
3. Mixed (dome growth and destruction)
4. Flank collapse
5. Eruption stop



Viernes 23-11-2012

Melchor Usura Quiroz
Director General del Sistema
Estatad de Protección Civil
Presente.

Myr. Trinidad López Rivas
Director General del Sistema
Estatad de Protección Civil
Presente.

Reunión del Comité Científico Asesor del Volcán de Colima. Ejercicio de simulacro de crisis volcánica VUELCO 2012.

CONSENSO:

1. Con la información que se dispone hasta el momento se puede concluir que existe una alta probabilidad de un escalamiento de la actividad hacia una erupción subpliniana a pliniana que implica por un lado, una lluvia de ceniza en un radio de 30 km a la redonda con preferencia en dirección de los vientos predominantes y por otro, colapsos de columna que provocarían flujos piroclásticos con alcances estimados de entre 12 y 15 km en los sectores E, SE, S y SO del volcán.
2. La presencia del huracán Ramirez aumenta la posibilidad de generación de lahares por las barrancas de los sectores antes mencionados.
3. Se recomienda **EXTENDER** la zona de exclusión de actividades para ambos estados a 15 kilómetros a partir de la cima del volcán sobre los cauces de las barrancas.
4. El Comité se mantiene en sesión permanente para observar el desarrollo del fenómeno.

Moderador

Gabriel Reyes Dávila
Universidad de Colima
CUEIV

...see INGV presentation..

C. The decision making.



(final interview on how they feel with different form of advice giving)

...see Univ. Bristol presentation



D. The people and media communication.

press conference
+
meeting with people



E. The evacuation of an exposed village.



...more pictures on www.vuelco.net

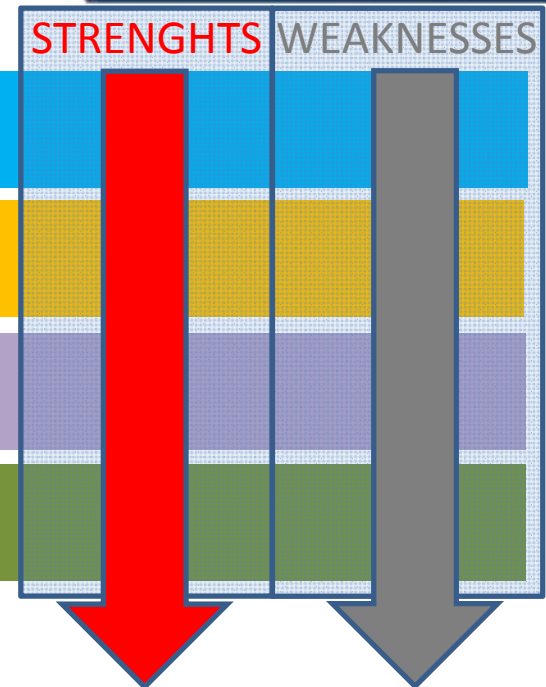
F. The debriefing. (still on-going)

GENERAL ASPECTS

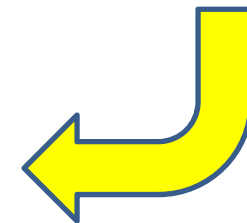
SCIENTIFIC PROCESS

COMMUNICATION SCIENTISTS-CIVIL PROTECTION

CIVIL PROTECTION ASPECTS



**SUGGESTIONS
FOR**



...LESSON LEARNED...

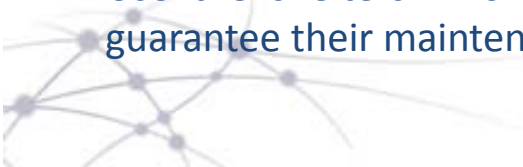
- Colima monitoring and surveillance system.
- Colima Civil Protection system.
- Scientific committee management and advice-giving.
- Organization and development of the next exercises.

SUGGESTIONS

- Clarify the use of BET and elicitation as tools supporting (not replacing) local experts.
- Try to avoid that social considerations affect scientific evaluation objectivity (even during elicitation).
- The form of advice giving should be agreed with the Civil Protection and its capacity and possibility to manage this kind of information.
- Try to clarify how the scientific advice should be used by the decision-maker (cost benefit analyses?) and if he is comfortable with managing this kind of process.

For Colima system:

- Improve the Colima monitoring and alert systems with infrasonic array and ash dispersal models based on meteorological model for wind field forecasting.
- Clearer definition of role, mandate and responsibilities of the Official Scientific Committee.
- Encourage self-evacuation and self-sheltering (autonomous accommodation) where possible.
- Found solutions to maintain family unity during evacuation and at the shelters.
- Limit the presence of army, entrusting to civil bodies (civil protection, volunteers) the management of the shelters and avoiding curfew (previous research needed).
- Use the shelters in ordinary time for other activities (social, cultural, educational), in order to guarantee their maintenance and to let people familiarize with them (organize free events).



Materials and documents produced:

- Colima volcano exercise plan.
- Colima volcano bibliography.
- For each scientific committee simulation meeting:
 - ✓ Monitoring rough data;
 - ✓ Monitoring signals synthetic presentations;
 - ✓ Advice released by Colima scientific committee;
 - ✓ Elicitation results and resume by VUELCO scientists.
- Mexican communication strategies check-list.
- Press and web review.
- Photograph collection.
- Debriefing report.



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