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Characterizing current opportunities and challenges in education and career development for the professional geohazards community in Guatemala (Appendices)

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Se está preparando una versión en español de este informe.

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Cover Image: Volcan de Fuego (2014)

These appendices support the following report:

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They contain the following resources:

1. Glossary of organizations in the professional geohazards community in Guatemala.
2. Table of organizations in the professional geohazards community in Guatemala, extrapolated from Table 1 in Results and containing further details and links to more information.
3. Survey template.
4. Full results of survey.

Appendix 1: Glossary of Organizations

This glossary presents the institutions defined in **Table 1** of this report that work within geohazards communities of practice in Guatemala.

ACH (Acción Contra el Hambre or Action Against Hunger) Guatemala is a private non-profit working in DRR in Guatemala and other countries. The organization works in early warning systems and risk management plans, providing support before, during, and after a crisis.

AGEO (Ambiente & Geología) is a business founded in 2020 that provides consultancy services in geological and environmental themes using technology.

AGIES (Asociación Guatemalteca de Ingeniería Estructural y Sísmica) is the Guatemalan Association for Structural and Seismic Engineering. This private non-profit (founded in 1996) is dedicated to research and teaching in structural and seismic engineering. The association conducts DRR-relevant research on hazards related to seismicity, including liquefaction and landslides.

AMSIG (Asociación Guatemalteca de Mecánica de Suelos y Ingeniería Geotécnica) is the Guatemalan Association for Soil Mechanics and Geotechnical Engineering. This organization promotes the study of soil mechanics, geotechnical engineering, and related studies in the country.

ASGA (Asociación Guatemalteca de Geociencias Ambientales) is the Guatemalan Association for Environmental Geosciences, located in Cobán, Alta Verapaz. This non-profit promotes research into environmental sciences in Guatemala, including effects of climate change.

ASIES (Asociación de Investigación y Estudios Sociales) is the Association of Social Studies and Investigation. The association is a private, non-profit think tank whose mission is to support the state through investigations that provide viable solutions to national problems.

CentraRSE (Centro para la Acción de la Responsabilidad Social Empresarial en Guatemala) is a non-profit focussed on corporate social responsibility. They work within the theme of climate change to understand risk management associated with natural disasters.

CEDESYD (Centro de Estudios de Desarrollo Seguro y Desastres) is the Centre of Studies on Sustainable Development and Disasters. It is a department of Guatemala's national university (USAC) based in Guatemala City that focusses on studies of sustainable development and disasters in Guatemala and abroad.

CEPREDENAC (Centro de Coordinación para la Prevención de los Desastres en América Central y República Dominicana) is the Centre of Coordination for the Prevention of Disasters in Latin America and the Dominican Republic. CEPREDENAC's mission is to "contribute to the reduction of vulnerability and the impact of disasters, as an integral part of the process of

transformation and sustainable development of the region [of Central America]" (source: [CEPREDENAC](#)).

CESEM (Centro de Estudios Superiores de Energía e Minas) is the Centre for Superior Studies on Energy and Mines. This research centre, part of USAC's Faculty of Engineering, describes its mission as: "Training staff and conducting studies capable of contributing to solutions to energy, geological, geotechnical, and mineral challenges, carrying out studies that prevent natural and anthropogenic disasters, [and] contributing to overall human development." (source: CESEM). As well as delivering undergraduate and graduate education, the centre provides expert advice to various sectors on geohazards including volcanic activity and ground movement including earthquakes.

CIG (Colegio de Ingenieros de Guatemala) is the College of Engineers of Guatemala. This organization brings together engineering professionals in Guatemala and is dedicated to "... the social welfare of its members and the responsible exercise of engineering in the country, promoting the active participation of all its members" (source: [CIG](#)).

CONRED (Coordinadora Nacional para la Reducción de Desastres) is the National Coordinator for the Reduction of Disasters. As Guatemala's national institution for DRR and civil protection, they are responsible for coordinating response to damages caused by geological hazards across Guatemala, as well as building capacity among communities at local, municipal, and departmental levels in preparedness for hazards including floods, earthquakes, hurricanes, and volcanic eruptions.

CUNOR (Centro Universitario del Norte) is the Northern University Centre, a campus of the national university (USAC) located in Cobán, Alta Verapaz. This campus hosts a geology school which provides the only undergraduate degree in geology in Guatemala.

ICC (Instituto Privado de Investigación sobre Cambio Climático) is the Private Institute of Investigation in Climate Change. The institute conducts investigation on various themes associated with geological hazards and climate change. Current projects include community resilience assessment to flood and drought events in the Coyolate river basin, and threats to livelihood from mobilization of river sediments from Fuego volcano.

IGN (Instituto Geográfico Nacional) is the National Geographic Institute. A department within MAGA, the IGN provides products and services of geographic and cartographic information for investigation, planning, and monitoring for Guatemala's development in both private and public sectors.

INSIVUMEH (Instituto Nacional de Sismología, Vulcanología, Meteorología e Hidrología) is the National Institute of Seismology, Volcanology, Meteorology, and Hydrology. INSIVUMEH is a scientific institution within the Guatemalan government and is a subordinate department of the Ministry of Communications, Infrastructure, and Housing (CIV). INSIVUMEH was founded on 26th March 1976 after the earthquake of 4th February 1976 that devastated large parts of Guatemala.

FLACSO (Facultad Latinoamericana de Ciencias Sociales) is the Latin American Faculty of Social Sciences, formed in 1957 and dedicated to the promotion, teaching, investigation, and technical cooperation in the social sciences across Latin America. The faculty currently has 18 member states. FLACSO-Guatemala was formed in 1987.

LA RED (La Red de Estudios Sociales en Prevención de Desastres en América Latina) is the Network for Social Studies in Disaster Prevention in Latin America. LA RED currently involves 31 investigators from across Latin America. The network depends on interinstitutional collaboration, involving many organizations from multiple sectors including governmental organizations, NGOs, academic institutions, and private organizations.

Latitud Geología y Ambiente is a private consultancy founded in 2017 offering professional services in various branches of geology to contribute towards the development of Guatemala.

MAGA (Ministerio de Agricultura, Ganadería y Alimentación) is the Ministry of Agriculture, Animal Husbandry, and Nutrition. This governmental ministry promotes comprehensive rural development in the agricultural, forestry, and hydrobiological sectors through development of organizational, productive, and commercial capacities.

MARN (Ministerio de Agricultura y Recursos Naturales) is the Ministry of Agriculture and Natural Resources. This governmental body is responsible for environmental and natural resources management, including the integration of data related to natural resources and climate change and the use of GIS for resource management and vulnerability mitigation.

Relieve is a business providing professional and consultancy services in applied geology and engineering. Areas of specialization include hydrology, hydrogeology, and geophysics.

SEGEPLAN (Secretaría General de Planificación y Programación de la Presidencia) is the Presidential Secretariat for Planning and Programming. This governmental body is responsible for overall development in Guatemala.

SismoConsult is a private consultancy that provides seismic hazard studies in Guatemala. Its founder, Dr. Hector Monzón, is also one of the founders of AGIES.

SGG (Sociedad Geológica de Guatemala) is the Geological Society of Guatemala. The society was founded in 1974.

SGM (Servicio Geográfico Militar) is the Military Geographical Service. This service is dedicated to obtaining and providing geographic and cartographic information.

SSG (Servicio Sismológico de Guatemala) is the Seismological Service of Guatemala. This is a private research institute belonging to the Institute of Investigations in Engineering, Mathematics, and Physical Sciences of Universidad Mariano Gálvez. SSG has a national network of seismometers and provide regular bulletins of activity.

UNDRR is the United Nations Office for Disaster Risk Reduction. Originally UNISDR when it was established in 1999, the office exists to facilitate the implementation of the International Strategy for Disaster Reduction (ISDR). UNDRR has been advocating for and promoting DRR for more than 20 years.

Universidad Mariano Gálvez is a private university located in the north of Guatemala City. The university's Faculty of Engineering provides various undergraduate and graduate engineering degrees and includes a research institute, *in³ (Instituto de Investigaciones de Ingeniería, Matemática, y Ciencias Físicas* – Instituto of Investigations in Engineering, Mathematics, and Physical Sciences). The institute hosts the Guatemalan Seismological Service, SSG (see above).

Universidad Rafael Landívar is a private university with various campuses around Guatemala. Although the university does not offer geohazards-related degrees comparable to other universities in Guatemala City, members of Rafael Landívar have collaborated on geohazards-related projects (e.g., working with CONRED to install a multispectral camera on Volcán Acatenango, psychosocial studies with survivors of the Panabaj disaster).

USAC (Universidad de San Carlos de Guatemala) is the national university of Guatemala. Its main campus is in Guatemala City, although its schools of Geology and Engineering are in its campuses in Cobán and Quetzaltenango (Xela), respectively.

UVG (Universidad del Valle de Guatemala) is a private university founded in 1966. Its Faculty of Engineering provides a civil engineering undergraduate course with several modules relevant to geohazards, including hydrology and ground quality.

Appendix 2: Table of Organizations

Institution	Sector	Est.	Theme(s)	Contact
ACH	Private non-profit	1998	DRR	Website
AGEO	Private consultancy	2020	Geological studies, hydrology	Website
AGIES	Private non-profit	1996	Structural and seismic engineering	Website
AMSIG	Professional association		Soil mechanics, geotechnical engineering	Website
ASGA	Private non-profit	-	Climate change	Facebook
ASIES	Private think-tank		Social studies	Website
CentraRSE	Private non-profit	2003	Corporate responsibility, climate change-related DRR	Website
CEDESYD	Public university department		Sustainable development, social studies	Website
CEPREDENAC	Public NGO	1987	DRR in Central America	Website , Facebook
CESEM	Public university department	1984	Seismology, geophysics, DRR	Website
CIG	Professional association	1948	Engineering	Website
CONRED	Government	1996	DRR, civil protection	Website
CUNOR	Public university campus (USAC)	1975	Geology, mineral exploitation	Website
ICC	Private institution	2010	Climate change, hydrology	Website
IGN	Government	1964	Cartography, GIS, geodesy	Website
INSIVUMEH	Government	1976	Seismology, volcanology, meteorology, hydrology	Website
FLACSO	International research faculty	1957	Social studies	Website
LA RED	Public institution	1992	Social studies on DRR	Website
Latitud Geología	Private consultancy	2017	Geol. studies, hydrogeology	Website
MAGA	Government	1920	Cartography, DRR, geography	Website
MARN	Government	2000	Environment, natural resources	Website
Relieve	Private consultancy	-	Geophysics, hydrology	Info on CUNOR site
SEGEPLAN	Government	1954	Development (including progress on SDGs)	Website
SismoConsult	Private consultancy	-	Seismic risk consultancy	Website
SGG	Social network	1974	Geological society	Website

SGM	Military	1969	Cartography	Website
SSG	Institute in private university	2010	Seismic monitoring and analysis	Website
UNDRR	United Nations office	1999*	Development towards the UN SDGs, DRR	Website
Uni. Mariano Galvez	Private university	1966	Engineering	Website
Uni. Mariano Galvez	Research institute in private university	2010	Research in hydrology, geology, seismology, environmental sciences, geodesy, engineering	Website
Uni. Rafael Landívar	Private university	1961	Volcano monitoring and DRR (partner of UPV)	Website
USAC	Public university	1676	Geology (CUNOR), DRR & geophysics (CESEM)	Website
UVG	Private university	1966	Environment	Website

Appendix 3: Survey Template

Survey for Professionals in Hazards Monitoring and Risk Management in Guatemala

This survey is for people who work in the professional sectors of monitoring and reduction of risks associated with natural hazards in Guatemala. The survey has two aims: (1) understand the current opportunities in training and professional development in these areas, and (2) understand challenges or gaps in training which may require support or strengthening in future.

The survey requires 10-15 minutes of your time to complete. It consists of a series of multiple-choice questions together with some open questions to which you can share your opinions. Your responses to this survey are confidential, and it will not be possible to identify you in any way. The responses to this survey will be included in a technical report for an NGO, Geology for Global Development, which aims to support the international community of geologists to achieve the UN Sustainable Development Goals (SDGs). Your responses to this survey will help to understand ways in which people working in the areas of monitoring and reduction of risks in Guatemala may be supported in the future.

Thank you very much for your time.

[* = answer required]

1. What sector do you work in? *
 - Private university
 - Public university
 - NGO
 - Governmental institution
 - Private consultancy
 - Self-employed
 - Other ...

2. What professional area do you work in? (Select all that apply):*
 - Volcanology
 - Geophysics
 - Seismology
 - Meteorology
 - Hydrology
 - Landslides
 - Engineering
 - Risk management
 - Disaster reduction
 - Sustainable development
 - Cartography
 - GIS
 - Geodesy
 - Other ...

3. How long have you worked in this professional area? *
 - <1 year
 - 1-3 years
 - 4-9 years

- 10-19 years
 - 20 years or more
 - Other ...
4. In your current job, have you had any of these opportunities?*
- Continuous professional development
 - Mentoring
 - Technical training courses (in-person)
 - Technical training courses (virtual)
 - Interpersonal skills courses (in-person)
 - Interpersonal skills courses (virtual)
 - Exchange
 - Institutional visits
 - Technical meetings
 - Academic conferences
 - Consultation
 - Other ...
5. In your current job, have you had any positive experience(s) of training or professional development that you would like to share? This might include technical courses, mentoring, visits to other institutions, exchanges, ... etc.
6. In your current job, what types of training or professional development do not exist that you would like to see?
7. In your current job, are/were there opportunities to collaborate with other institutions or people in Guatemala who work in similar professional areas?*
- Yes
 - No
 - Don't know
8. What are/were these opportunities?
9. In your current job, are/were there opportunities to collaborate with other institutions or people in other countries who work in similar professional areas?*
- Yes
 - No
 - Don't know
10. What are/were these opportunities?
11. Have you worked in any other area of monitoring or management of risk associated with natural hazards?*
- Yes
 - No
 - Maybe
 - Other ...
12. If "Yes", in which other area(s) have you worked? Select all that apply:
13. How old are you?*
- 18-25

- 26-35
- 36-45
- 46-55
- 66+
- Prefer not to say

14. What is your gender?*

- Male
- Female
- Prefer not to say

15. What is the highest level of education you have achieved?*

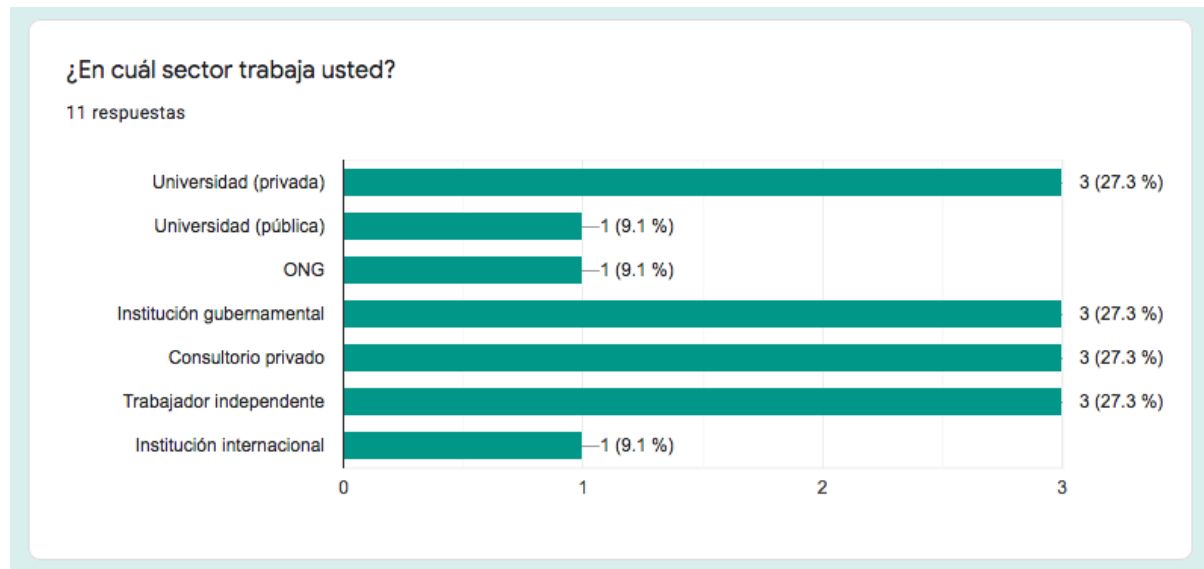
- Primary school
- Secondary school (basico)
- Secondary school (colegio)
- Undergraduate degree
- Postgraduate degree (Master's)
- Postgraduate degree (PhD)
- Prefer not to say
- Other ...

16. Do you have any other opinion or suggestion that you would like to share?

Appendix 4: Survey Results

Survey for Professionals in Hazards Monitoring and Risk Management in Guatemala

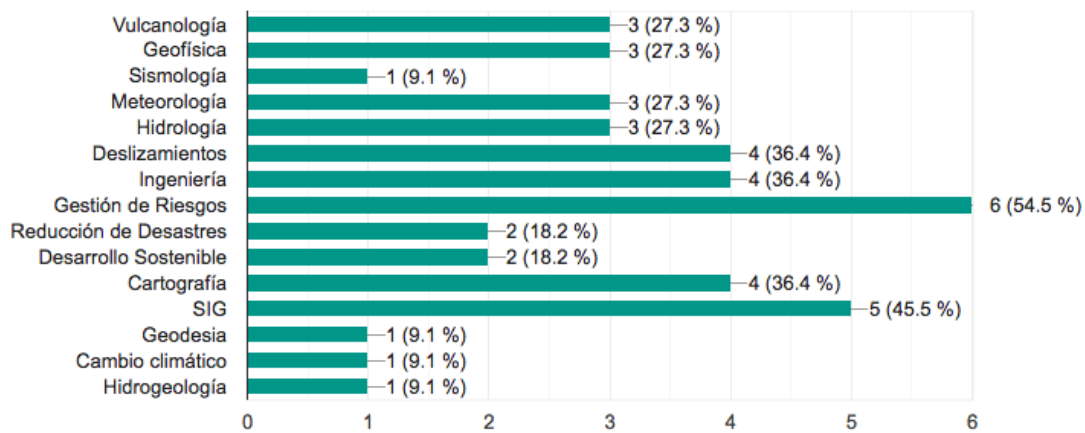
This survey is for people who work in the professional sectors of monitoring and reduction of risks associated with natural hazards in Guatemala. The survey has two aims: (1) understand the current opportunities in training and professional development in these areas, and (2) understand challenges or gaps in training which may require support or strengthening in future.



¿En cuál área profesional trabaja usted? (Seleccione todas las que aplican)

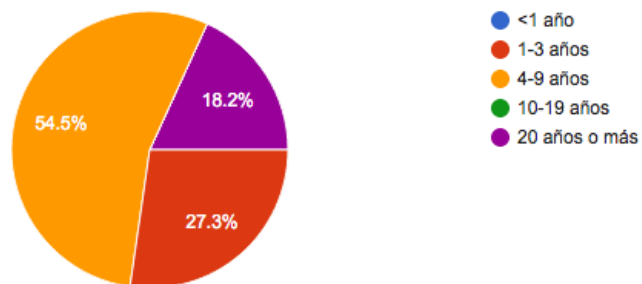


11 respuestas



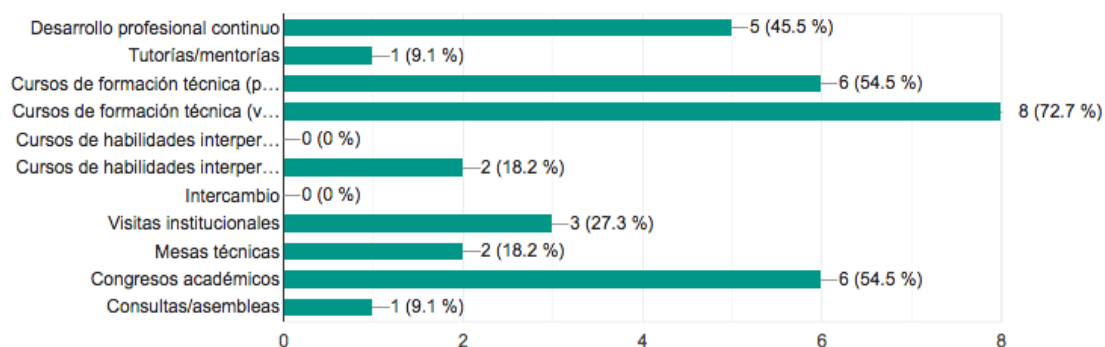
¿Por cuántos años ha trabajado en esta área profesional?

11 respuestas



En su trabajo actual, ¿ha tenido algunas de estas oportunidades?

11 respuestas



En su trabajo actual, ¿ha tenido alguna experiencia buena de formación o desarrollo profesional que puede compartir? Este puede incluir cursos técnicos, tutoría/mentoría, visitas a otras instituciones, intercambios, ... etc.

9 respuestas

Si

Capacitación continua en procesos relacionados con en que hacer de la institución, principalmente en temas de seguridad informática.

Cursos cortos en centro de meteorología en el extranjero.

Por el momento ninguno debido a la pandemia

Si, hemos tenido formación profesional de manera virtual y presencial, como inducciones en el extranjero como Canadá.

Participación en plataformas universitarias y de Gestión de Riesgo

por mi cuenta he buscado capacitación a traves de becas al extranjero pero cursos cortos

Intercambio directo de conocimientos con expertos académicos/técnicos internacionales

En su trabajo actual, ¿cuáles tipos de formación o desarrollo profesional no existen que le gustaría tener?

8 respuestas

Meteorología, no existe formacion academica en el pais.

Mejorar la red de vigilancia y fortalecer las capacidades personales

Restauración Ambiental en espacios perturbados.

Diplomados de geociencias enfocados a ambiente o gestión de riesgos

Intercambio con otras intituciones y universidades

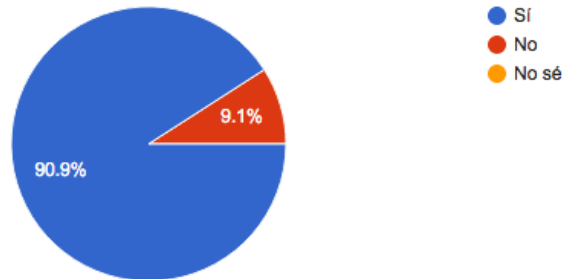
Educación continua y tutorías

sistemas de información geográfica avanzado, maestría presencial con derecho a regresar a mi posición actual

Maestría / Doctorado en geociencias.

En su trabajo actual, ¿hay o han habido oportunidades de colaborar con otras instituciones y/o personas en Guatemala que trabajan en temas relacionados?

11 respuestas



¿Cuáles son/eran estas oportunidades?

10 respuestas

Apoyo a instituciones gubernamentales y regionales

Trabajo interinstitucional con CONRED

Cooperación en investigación

Investigaciones de caudal ecológico.
Gestión de riesgos aplicadas a carreteras nacionales.

Alianzas profesionales con otras empresas como AGEO

No he tenido hasta el momento

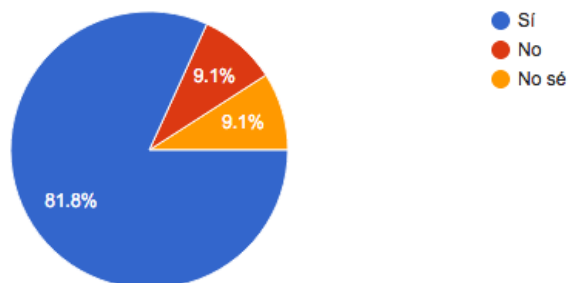
Trabajo con el INSIVUMEH y algunas universidades extranjeras

Municipalidades y empresas privadas

talleres interinstitucionales de SIG

En su trabajo actual, ¿hay o han habido oportunidades de colaborar con otras instituciones y/o personas en otros países que trabajan en temas relacionados?

11 respuestas



¿Cuales son/eran estas oportunidades?

9 respuestas

Apoyo a instituciones regionales.

Existen diversas oportunidades para colaborar pero hemos estado un poco atrasados por la pandemia

Estudio de caudal ecológico en conjunto con un investigador de la Universidad Valladolid de España.

Geofísicos en el extranjero que nos apoyan con interpretaciones

No he tenido hasta el momento

Investigaciones apoyadas a través de estudiantes de maestría

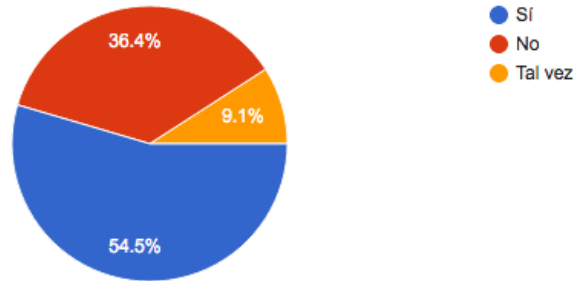
Universidad de Valladolid

talleres y capacitaciones con homólogos de países vecinos

Cursos cortos, talleres, pasantías.

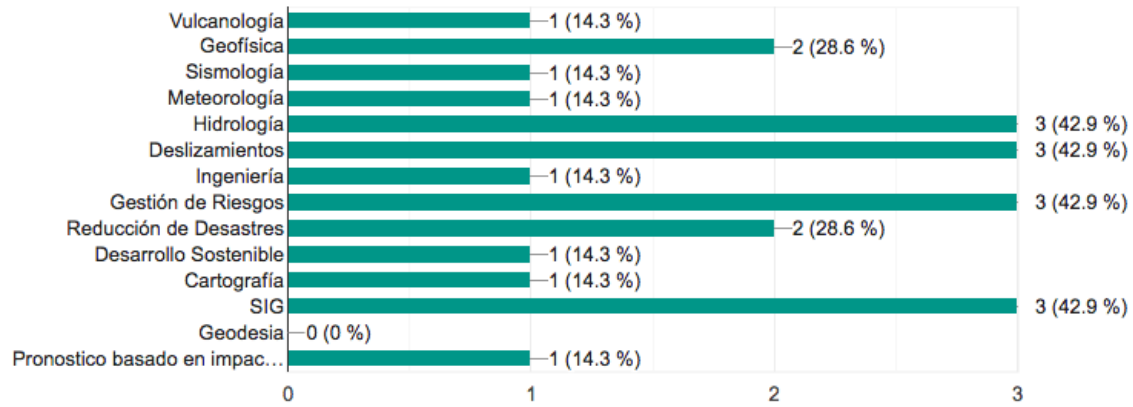
¿Ha trabajado en alguna otra área profesional en el monitoreo y/o gestión de riesgos asociados con amenazas naturales?

11 respuestas



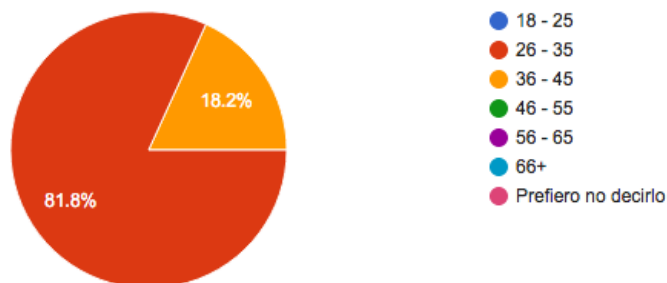
Si "sí", ¿En cuál otra área o áreas ha trabajado? Seleccione todas las que aplican:

7 respuestas



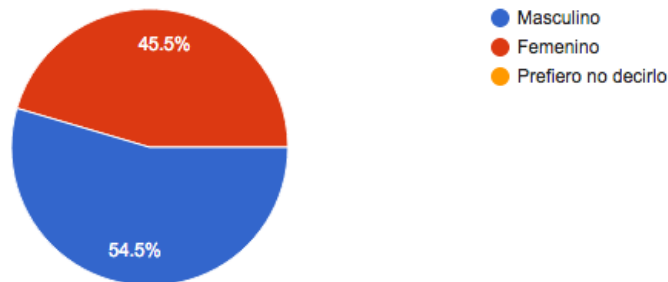
¿Cuántos años tiene usted?

11 respuestas



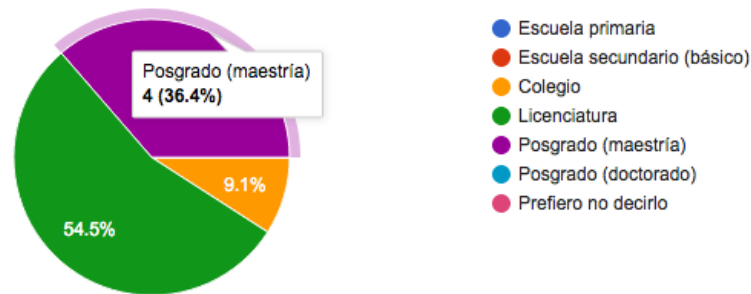
¿Cuál es su genero?

11 respuestas



¿Qué nivel de educación ha logrado usted?

11 respuestas



¿Usted tiene alguna otra opinion o sugerencia que quiere compartir?

5 respuestas


Uno de los problemas fundamentales en lo referente a la gestión de riesgo de desastres es la escasa institucionalidad que existe, el poco apoyo a temas técnicos y la escasa oportunidad de crecimiento profesional. No existe una carrera de servicio civil en relación al tema. La rotación de personal a nivel gerencial, reduce la posibilidad de continuidad de procesos.

Las preguntas abiertas no han sido respondidas porque no aplican al trabajo actual, pero sí a trabajos anteriores. Las oportunidades de formación dependen mucho del sector en que se está trabajando (la iniciativa privada tiene menos apertura que la pública, por ejemplo).

No.

promover la capacitación sur sur y capacitación a nivel avanzado en temas de SIG

Pienso que la mayoría de personas que trabajan en el area de monitoreo o gestion del riesgo por amenazas naturales, generan productos para aportar suficientes bases tecnicas para la toma de decisiones. Sin embargo, hay un obstaculo muy grande que no permite potencializar estos productos y llevarlos a un nivel superior, este es: la falta de preparacion academica a nivel doctorado (o superior). Lamentablemente, sin este ingrediente el horizonte que se logra visualizar por el personal academico/tecnico actual será muy corto, no nos permitirá llegar muy lejos.



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