Tongariro Volcanic Hazards Simulation – Interactive Bibliography

Instructions:
1. Go to your assigned role.
2. Review your specific responsibilities.
3. Read and summarize the necessary literature to prepare for the simulation.
4. Read the instructions (separate document).

Note: The more prepared you are for the simulation, the better overall you and your team can respond to the volcanic event.

Click the links (in the readings row) to download the papers from my Dropbox. If you have trouble downloading any of the papers, please email **Jackie** asap (jdohaney@gmail.com).

Emergency Management Team

Role:	**Group Controller**
Responsibilities:	Team Leader; to lead, direct and coordinate the emergency response. Primary decision-maker. **CHALLENGE** questions may be posed to you and your teams. Respond accordingly and communicate this information as instructed. Be sure to read the cards with the people noted, so that everyone is informed.
Important Readings:	Volcanic Alert Levels (GNS); Advice to Emergency Management Team Leaders (Australian Govt)
Additional Readings:	Advice to the Public during an Eruption (MCDEM); Tongariro Alpine Crossing Fact Sheet (DOC) Impacts of ash from Tongariro (Hitchcock and Cole)

Role:	**Duty Manager**
Responsibilities:	Coordinates and organises the EM Team, assists Group Controller to carry out tasks. Receives incoming information from GeoNet and delegates tasks. When an eruption occurs, your team must fill out Volcanic Impact Reports. It is your responsibility to make sure your team members fill these out.
Important Readings:	Volcanic Alert Levels (GNS); Advice to Emergency Management Team Leaders (Australian Govt)
Additional Readings:	Tongariro Alpine Crossing Fact Sheet (DOC) Impacts of ash from Tongariro (Hitchcock and Cole)

Role:	**Crisis Information Manager**
Responsibilities:	Records all incoming information from the **Newsfeed** (i.e., social media) tab, and distributes this information to the team. Keeps the team up to date with the public's wants and needs. Vets information carefully. If an event occurs, you will work with the Public Information Officers to fill out Media Releases.
Important Readings:	Advice to the Public during an Eruption (MCDEM) Tongariro Alpine Crossing Fact Sheet (DOC)
Additional Readings:	Media Release to the Public after a small eruption on Ruapehu (MCDEM); Media Release to the Public after the Canterbury Earthquake (MCDEM); Media coverage after Ruapehu eruptions 1995 (Reuters); Example of news article after Ruapehu activity, and misquoting of scientist (Smellie)

Role:	**Public Information Officer**
Responsibilities:	Writes media releases to the public concerning event advice (what to do, what to be prepared for...). Liaises with GeoNet Team, and gathers incoming information. Media Releases should be timely, concise and considered.
Important Readings:	Tongariro Alpine Crossing Fact Sheet (DOC) Media Release to the Public after a small eruption on Ruapehu (MCDEM); Media Release to the Public after the Canterbury Earthquake (MCDEM); Media coverage after Ruapehu eruptions 1995 (Reuters); Example of news article after Ruapehu activity, and misquoting of scientist (Smellie)
Additional Readings:	VEI: Volcanic Explosivity Index (Newhall & Self); Advice to the Public during an Eruption (MCDEM)

Role:	**Planning Manager(s)**
Responsibilities:	Planning managers are the roles which consider all sectors and how they interact. You will be most concerned with roading networks and how that impacts all other sectors. You will be primarily supporting welfare and infrastructure efforts and thinking about how situations will play out. Essentially you are helping think “big picture” and working to coordinate the different groups and needs.
Important Readings:	Tongariro Alpine Crossing Fact Sheet (DOC) Volcanic ash impacts on critical infrastructure (Wilson);
Additional Readings:	Aviation hazards from Volcanoes (Prata & Tupper); Advice for Airports during an Eruption (Wilson & Stewart); Advice for use of Generators during an Eruption (Hill et al); Advice for Power Plant Operators during an Eruption (Wilson et al); Impacts of ash from Tongariro (Hitchcock and Cole) Aviation Alert Level Codes (GNS);

Role:	**Infrastructure Coordinator**
Responsibilities:	Primarily in charge of the status (open, closure) of roads, water (waste and drinking), shipping, rail, and airports. Work with Planning Manager on roads. Work with Welfare Officer on evacuation routes.
Important Readings:	Aviation Alert Level Codes (GNS); Volcanic ash impacts on critical infrastructure (Wilson); Advice for use of Generators during an Eruption (Hill et al); Advice for Roading Managers during an Eruption (Wilson et al); Advice for Building Managers during an Eruption (Wilson et al); Advice for Power Plant Operators during an Eruption (Wilson et al); Advice for Power Transmission Operators during an Eruption (Wilson et al); Advice for Wastewater Managers during an Eruption (Wilson et al); Advice for Water Supply Managers during an Eruption (Stewart and Wilson);
Additional Readings:	Tongariro Alpine Crossing Fact Sheet (DOC); Ash leachates (Stewart et al) Impacts to Agriculture from Eruptions (Wilson and Cole) Impacts of ash from Tongariro (Hitchcock and Cole)

Role:	**Welfare Officer**
Responsibilities:	Organising and planning the essentials of life for people affected by an event – Primarily concerned with evacuation centres, Salvation Army, and Housing

	New Zealand. Works with Planning Manager on evacuation routes and centre locations. Works with VSAG Human Impacts on how volcanic eruptions may affect citizens.
Important Readings:	Volcanic ash impacts on critical infrastructure (Wilson); Advice for Building Managers during an Eruption (Wilson et al); Organisational Response to Ruapehu Eruption (Paton et al) Human Impacts from Volcanoes (Doocy et al)
Additional Readings:	Tongariro Alpine Crossing Fact Sheet (DOC) Impacts of ash from Tongariro (Hitchcock and Cole)

Role:	**Human Impacts (Volcanic Scientific Advisory Group)**
Responsibilities:	Specialises on how ash and volcanic eruptions impact humans (health, sociological, and infrastructure related). Liases with other members of the EM Team to assess impacts to human health. Should request information from GeoNet as needed (e.g., ash composition, size, eruption styles, etc.)
Important Readings:	Ash leachates (Stewart et al) Contamination of water supplies due to volcanic ash (Stewart et al); Tongariro Alpine Crossing Fact Sheet (DOC); Human Impacts from Volcanoes (Doocy et al) Impacts of ash from Tongariro (Hitchcock and Cole)
Additional Readings:	Volcanic ash impacts on critical infrastructure (Wilson); Advice for Water Supply Managers during an Eruption (Stewart and Wilson); Advice for Building Managers during an Eruption (Wilson et al);

Role:	**Agriculture & Forestry Impacts (Volcanic Scientific Advisory Group)**
Responsibilities:	Provides EM Team with advice on how eruptive activity and decision-making will impact the agriculture and forestry sectors. Should focus on short term and long term impacts to these sectors. Specifically immediate impacts and relocation of livestock; and long term impacts to soils and trees.
Important Readings:	Tongariro Alpine Crossing Fact Sheet (DOC) Impacts to Agriculture from Eruptions (Wilson and Cole) Impacts to Agriculture and Forestry (Neild et al)
Additional Readings:	Volcanic ash impacts on critical infrastructure (Wilson); Impacts of ash from Tongariro (Hitchcock and Cole)

Role:	**Department of Conservation (DOC)**
Responsibilities:	Makes final call on whether to close, open, and events occurring within the National Park boundaries. Should liaise with GeoNet and their Field Team to coordinate any efforts to go into the National Parks. When the National Park is closed, you must file a DOC Closure of Park Report. Read more about the Department of Conservation.
Important Readings:	Tongariro Alpine Crossing Fact Sheet (DOC)
Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); History of Activity at Tongariro Volcanic Centre (Hobden et al) Impacts of ash from Tongariro (Hitchcock and Cole) Aviation Alert Level Codes (GNS);

GNS GeoNet Team

Role:	**Volcanic Section Manager**
Responsibilities:	Team Leader; To lead, direct and coordinate monitoring of volcanoes in NZ. Makes final decision to raise or lower alert levels. When/if an Alert Level must be raised or lowered, you need to fill out an Alert Level Change form. **CHALLENGE** questions may be posed to you and your teams. Respond accordingly and communicate this information as instructed. Be sure to read the cards with the people noted, so that everyone is informed.
Important Readings:	Volcanic Alert Levels (GNS); Volcanic Eruption Meeting Agenda (Jolly); VEI: Volcanic Explosivity Index (Newhall & Self); Advice to Emergency Management Team Leaders (Australian Govt); Volcanic and Structural Evolution of the TVZ (Wilson et al); History of Activity at Tongariro Volcanic Centre (Hobden et al) Modelling geophysical (a.k.a., seismic) precursors at Mt Tarawera (Sherburn and Nairn)
Additional Readings:	Basics on monitoring Gas, Seismic and Deformation (IRIS); Working on Volcanoes (GNS) Tongariro Alpine Crossing Fact Sheet (DOC)

Role:	**Duty Manager**
Responsibilities:	Coordinates and organises the GeoNet Team, assists Section Manager to carry out tasks. Receives incoming information from EM and delegates tasks.
Important Readings:	Volcanic Alert Levels (GNS); Advice to Emergency Management Team Leaders (Australian Govt)
Additional Readings:	Tongariro Alpine Crossing Fact Sheet (DOC) Impacts of ash from Tongariro (Hitchcock and Cole)

Role:	**Public Information Officer**
Responsibilities:	Writes media releases to the public concerning the SCIENCE of an event. Liases with EM Team, and provides timely information as the event unfolds. Media Releases should be timely, concise and considered.
Important Readings:	Volcanic Alert Levels (GNS); VEI: Volcanic Explosivity Index (Newhall & Self); Media Release to the Public after a small eruption on Ruapehu (MCDEM); Media coverage after Ruapehu eruptions 1995 (Reuters); Example of news article after Ruapehu activity, and misquoting of scientist (Smellie)
Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); History of Activity at Tongariro Volcanic Centre (Hobden et al)

Role:	**Geophysics (Remote Monitoring)**
Responsibilities:	Monitors **seismic** data tabs. Records, analyses this data and provides updates to GeoNet Team. **Additional datasets** may show up in the Newsfeed data tab.
Important Readings:	Volcanic Alert Levels (GNS); Modelling geophysical (a.k.a., seismic) precursors at Mt Tarawera (Sherburn and Nairn); Basics on monitoring Gas, Seismic and Deformation (IRIS)

Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); VEI: Volcanic Explosivity Index (Newhall & Self)

Role:	**Geochemistry (Remote Monitoring)**
Responsibilities:	Monitors **geochemistry** data tab. Records, analyses this data and provides updates to GeoNet Team.
Important Readings:	Volcanic Alert Levels (GNS); COSPEC at Active Volcanoes (Stix et al); Basics on monitoring Gas, Seismic and Deformation (IRIS)
Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); VEI: Volcanic Explosivity Index (Newhall & Self); Ash leachates (Stewart et al);

Role:	**Geodesy (Remote Monitoring)**
Responsibilities:	Monitors **ground deformation** data tab. Records, analyses this data and provides updates to GeoNet Team.
Important Readings:	Volcanic Alert Levels (GNS); Modelling geophysical (a.k.a., seismic) precursors at Mt Tarawera (Sherburn and Nairn); Basics on monitoring Gas, Seismic and Deformation (IRIS)
Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); VEI: Volcanic Explosivity Index (Newhall & Self)

Role:	**Visual Surveillance (Volcanology Unit)**
Responsibilities:	Monitors **Visuals (webcam)** data tab. Records, analyses this data and provides ongoing updates to GeoNet Team. Be aware of extra data sets that may show up in the **Newsfeed** tab.
Important Readings:	Volcanic Alert Levels (GNS); VEI: Volcanic Explosivity Index (Newhall & Self); Volcanic and Structural Evolution of the TVZ (Wilson et al); History of Activity at Tongariro Volcanic Centre (Hobden et al)
Additional Readings:	COSPEC at Active Volcanoes (Stix et al); Basics on monitoring Gas, Seismic and Deformation (IRIS);

Role:	**MetService Meteorologist (Volcanology Unit)**
Responsibilities:	Monitors **Weather** data tab. Records this data and provides ongoing updates to the Ash and Flow scientists (they need this information to make tephra dispersal maps). Be aware that **Weather Forecasts** will show up in the **Newsfeed** tab.
Important Readings:	Volcanic Alert Levels (GNS); Basics on monitoring Gas, Seismic and Deformation (IRIS); Quantitative Modelling of Ash Plumes (Carey and Sparks)
Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); VEI: Volcanic Explosivity Index (Newhall & Self)

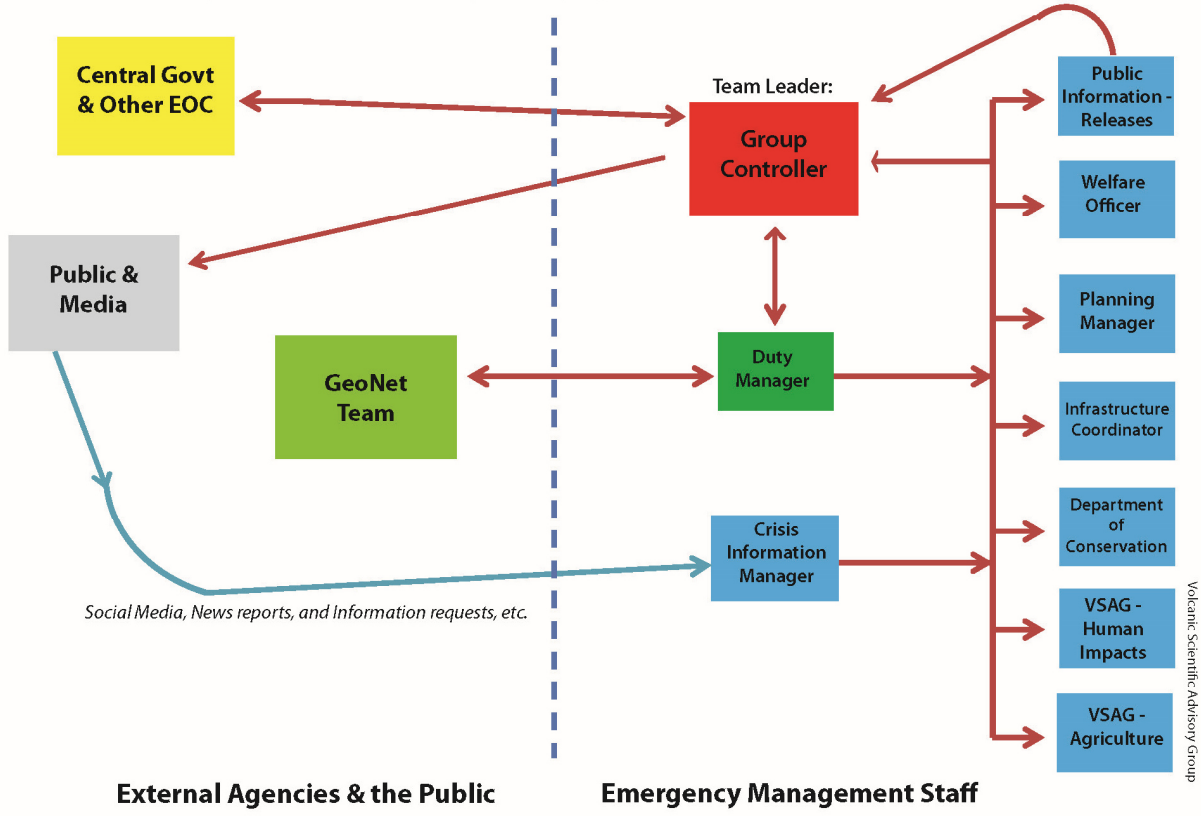
Role:	**Ash Specialist (Volcanology Unit)**
Responsibilities:	Monitors **Ash Reports** data tab. Records data, and creates ash dispersal maps based on each eruption. Ash dispersal maps can be made using this **Ash Plume**

	Model excel sheet: Ash Plume Dispersal Model Excel Sheet (Hill and Edwards) If you have questions on how to use this excel sheet, please ask. You will need weather information to help calculate ash thicknesses. ***This information must be sent to the EM team as soon as possible.***
Important Readings:	Volcanic Alert Levels (GNS); Ruapehu Ash Isopach Example (Wilson); Quantitative fall out models of ash; Used to determine ash cloud distributions (Carey and Sparks)
Additional Readings:	Volcanic and Structural Evolution of the TVZ (Wilson et al); VEI: Volcanic Explosivity Index (Newhall & Self); Basics on monitoring Gas, Seismic and Deformation (IRIS); Advice for Airports during an Eruption (Wilson & Stewart)

Role:	**Field Team (Volcanology Unit)**
Responsibilities:	To organise, plan field excursions to check for visually observed and measured data that cannot be assessed remotely. Must ask permission from **Section Manager** when going out into the field by filling out Fieldwork Risk Assessment forms. Check with other GeoNet team members if additional datasets are needed. When "going to the field" – visit the "**Volcano**" to get your information.
Important Readings:	Working on Volcanoes (GNS); Volcanic Alert Levels (GNS); Volcanic and Structural Evolution of the TVZ (Wilson et al); History of Activity at Tongariro Volcanic Centre (Hobden et al) VEI: Volcanic Explosivity Index (Newhall & Self); Basics on monitoring Gas, Seismic and Deformation (IRIS) Pyroclastic flow assessments from Merapi 2010 eruptions (Jenkins et al);
Additional Readings:	COSPEC at Active Volcanoes (Stix et al); Modelling geophysical (a.k.a., seismic) precursors at Mt Tarawera (Sherburn and Nairn);

Flow of Information [EM Team]

Note: The direction of arrows represents the flow of information, from one party to another.



Flow of Information [GeoNet Team]

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