AI for Natural Disaster Management

ITU Focus Group

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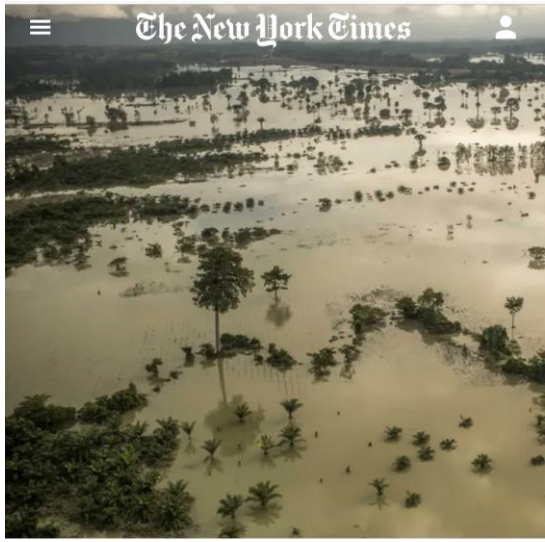
The challenge

Natural disasters are damaging physical events caused by natural hazards.

The situation is exacerbated in **certain regions** and for certain **populations;** and is expected to **worsen**.



A view of the vast flooding in Guatemala after Hurricanes Eta and Iota struck one after the other last month.

2 Hurricanes Devastated Central America. Will the Ruin Spur a Migration Wave?

(4 Dec 2020, NYT)

The challenge

Natural disasters feature prominently in the activities of multiple **UN organizations** and **programmes** including

- SDGs
- policy-guiding publications (e.g., Sendai Framework, IPCC SREX)

13 CLIMATE ACTION

TAKE URGENT ACTION TO COMBAT CLIMATE CHANGE AND ITS IMPACTS

Sendai Framework
for Disaster Risk Reduction
2015 - 2030

MANAGING THE RISKS OF EXTREME EVENTS AND DISASTERS TO ADVANCE CLIMATE CHANGE ADAPTATION

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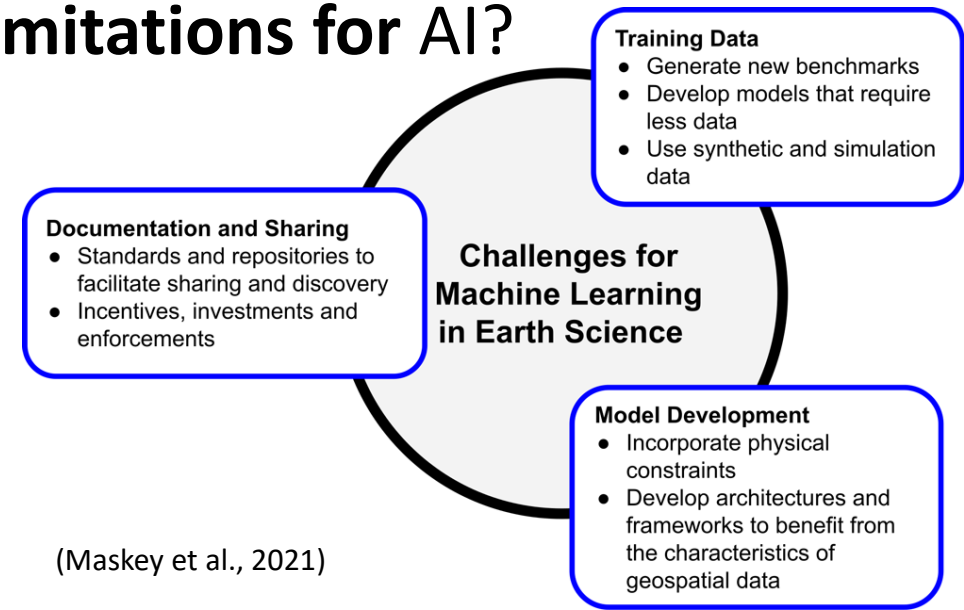
The questions

Through tapping the **potential of AI**, can we improve our **understanding** of natural hazards, our ability to **detect** events in real-time, our ability to **forecast** events, and our ability to effectively **communicate** an impending or ongoing disaster?

What are the **best practices** and **limitations for** AI?



(Maskey et al., 2021)

The goals

Explore best practices in:

- **data** collection, monitoring, and handling for training and testing of AI-based algorithms;
- **AI-based algorithms** for reconstructing, detecting, and forecasting events; and
- effective **communication**.

Data

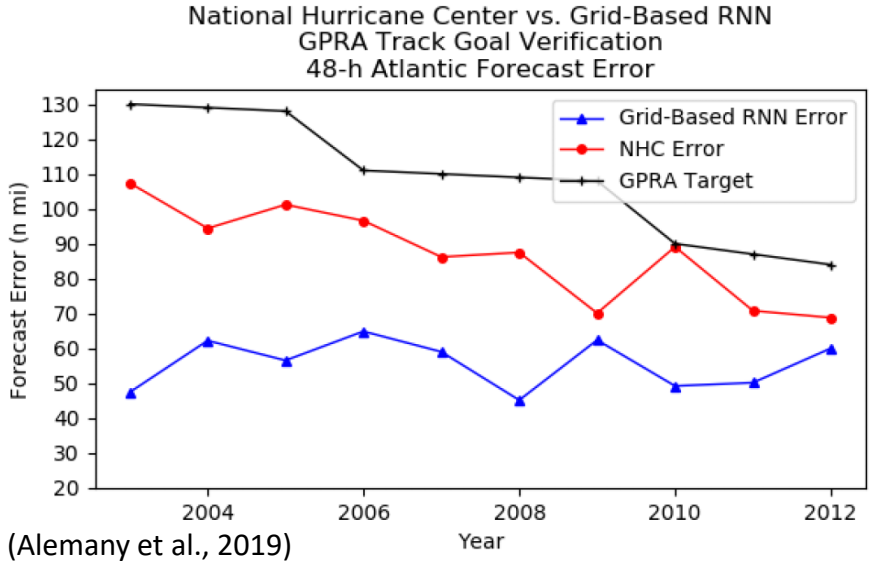
Some questions to explore are:

- what **requirements** should data meet when being used to train or test an AI-based algorithm?
- can AI-based algorithms be used to **enhance** data quantity and quality?

AI-based algorithms

Some questions to explore are:

- what is the current **gold standard** method to reconstruct, detect, or forecast events? How can AI-based algorithms bring these methods to the **next level**?
- what should be considered when **training** and **evaluating** an AI-based algorithm?



(Alemany et al., 2019)

Communication

Some questions to explore are:

- once an event has been forecast or triggered, how can AI assist with the immediate response?
- how do we ensure that communication methods are reliable and trusted by the population? Are they accompanied by a clear set of protocols to ensure that individuals know how to respond?

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Key deliverables

- **Workshops**
- **Roadmap**
- **Glossary**
- Three non-normative **technical reports**
- **Educational materials**

FG-AI4NDM

What is an **ITU Focus Group**?

- Supports the efforts of an associated **ITU Study Group**. Study Group 2 mandate includes *"telecommunications for disaster relief/early warning, network resilience, and recovery."*
- Provides a working environment for **pre-standardization or standardization** activities in a chosen area.
- Can be rapidly established and has freedom to choose working methods, leadership, financing, and desired outputs ("deliverables").

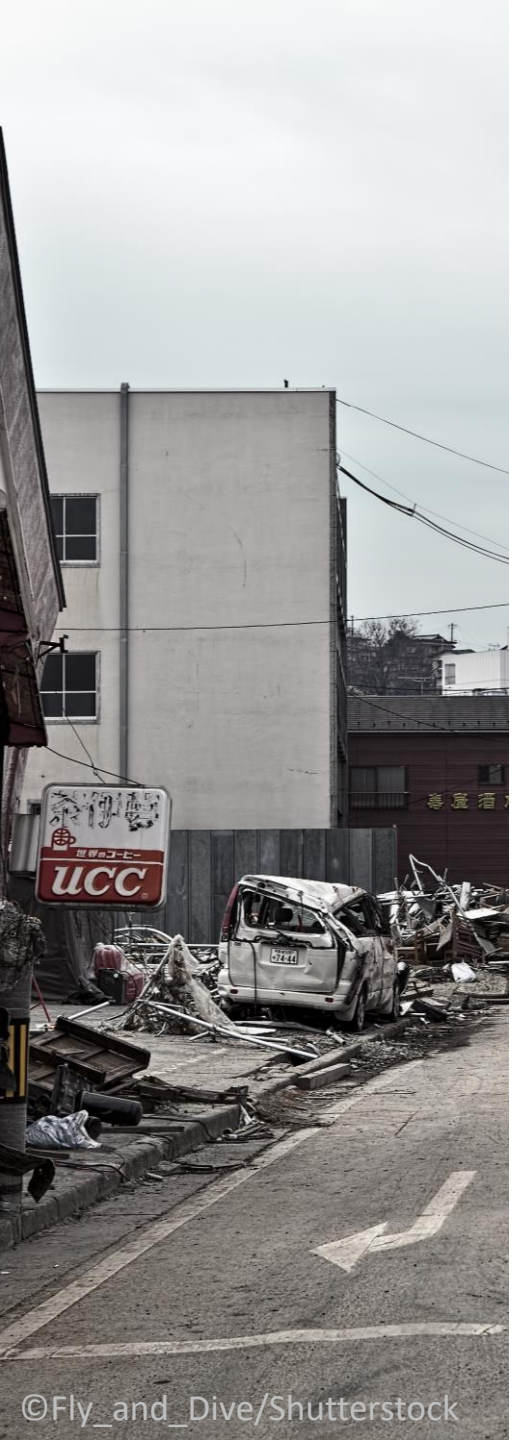
FG-AI4NDM

ITU/WMO/UNEP Focus Group on AI for Natural Disaster Management (**FG-AI4NDM**) converges the ICT expertise of ITU with natural disaster expertise from the WMO and UNEP.

Creates an atmosphere that is conducive to international, multi-stakeholder, and interdisciplinary collaboration.

ITU

UN environment programme



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FG-AI4NDM

Management Team

ITU TSB

Mythili Menon, Advisor &
Hiba Tahawi, Secretariat

WG-Data

WG-Modelling

WG-Communications

Technical reports

TG-AI for flood data monitoring

TG-AI for landslide data monitoring

TG-AI for tsunami data monitoring

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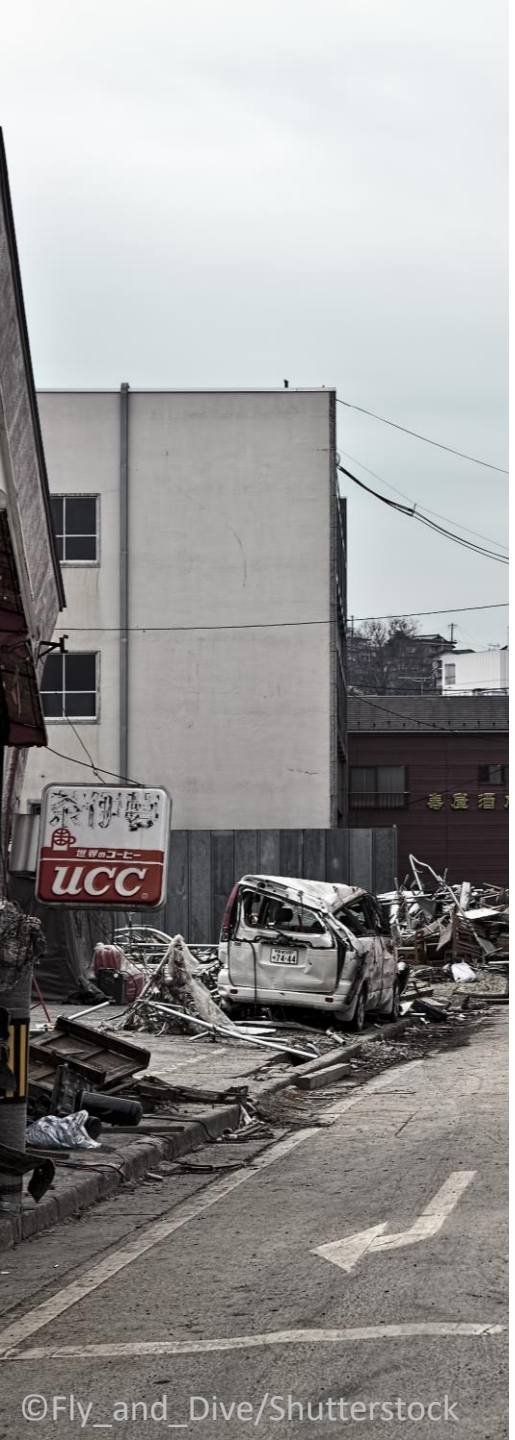
Use cases



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Vice Chair
Yan Chuan Wang
China Telecom, China

Get involved!

Visit our website (https://itu.int/go/fgai4ndm)

Peruse our **onboarding document** for guidance on how to:

- Create a free **ITU user account**
- Join our low-volume **mailing list**
- **Register** for our workshops/meetings
- Use our remote participation platform (**MyMeetings**)
- Access our **collaboration site**
- Submit written **contributions**

Get involved!

Join our meeting on **24-25 June**!

Share your expertise!