# Insurance Development Forum

# Risk Modelling Steering Group

## Oasis Insight Conference - London

## 25 April 2024

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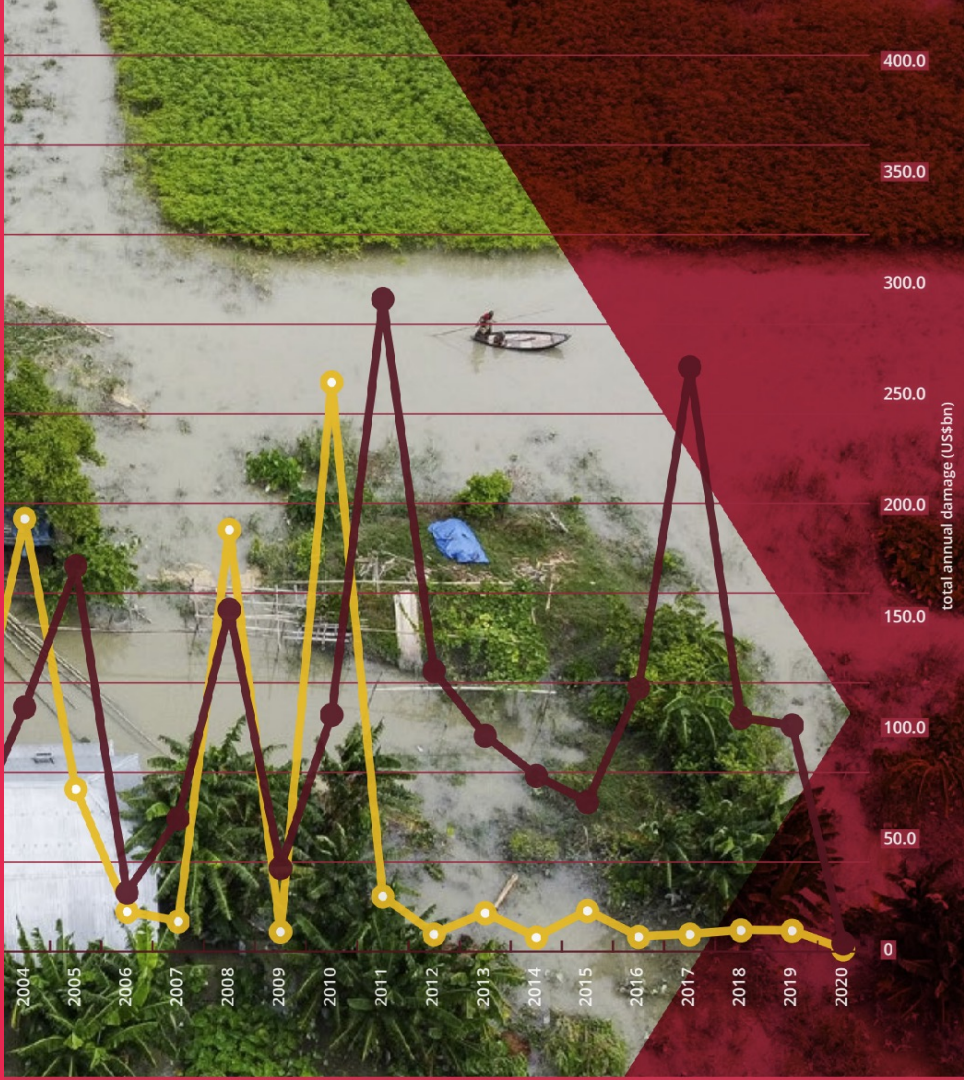


# Agenda

RMSG activities and strategy

*Rachel Delhaise, Group Head of Sustainability, Convex Insurance*

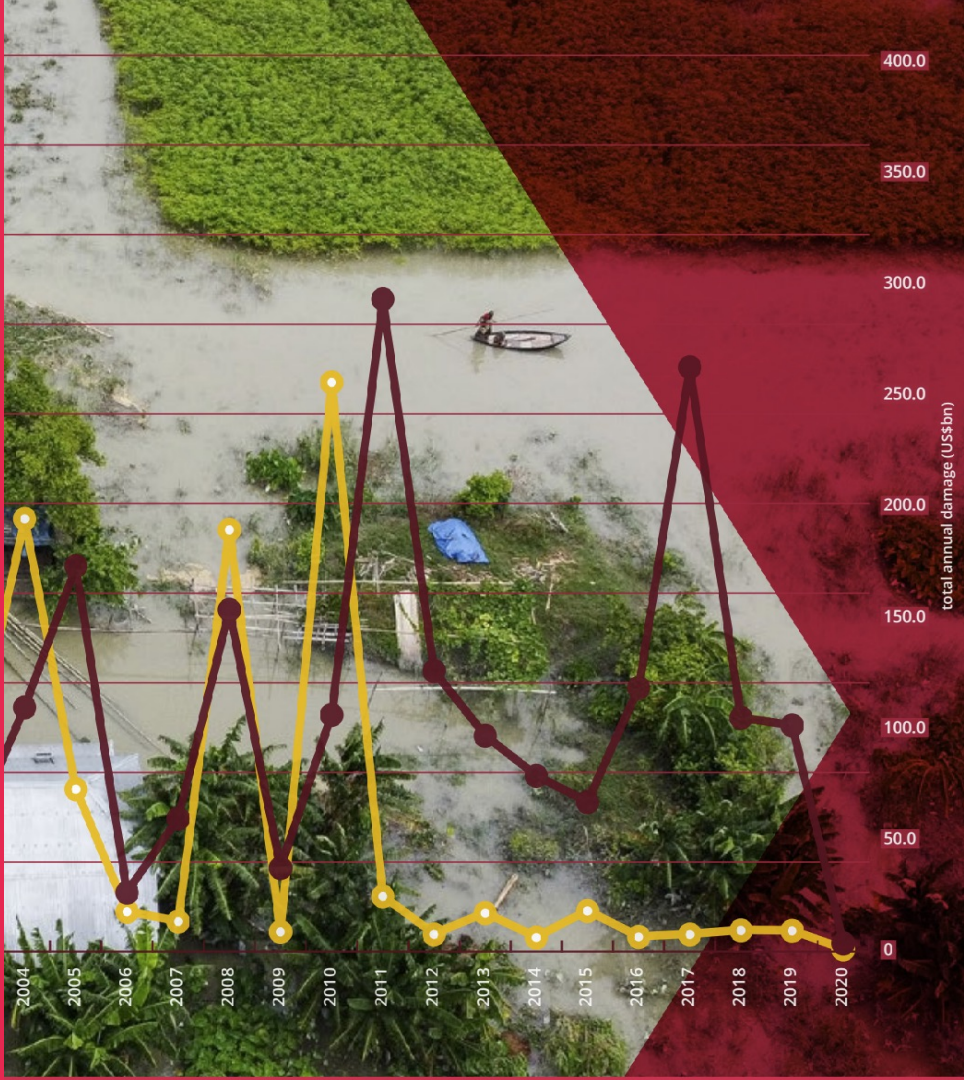
RMSG / Oasis LMF technical projects – 2024

*Ben Hayes, CTO Oasis Loss Modelling Framework*

Cyclone and drought parametric approaches in the Oasis Risk Explorer

*James McIlwaine, Chief Product Officer, Maximum Information*

# RMSG activities and strategy

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# RMSG: Strategy in a nutshell

## Vision

Enabling **risk and resilience decision-makers** in vulnerable countries with **quality risk insight** though access to **peril region specific models** and datasets, on **open platforms**

## Unique position

Bringing re/insurance sector **risk expertise** to **unlock finance**, connecting **public and private** sectors.

## Strategy

**Theme 1** Invest in continuous development of **open risk modelling infrastructure** and **open data standards**;  Oasis LMF and ODS as a foundation

**Theme 2** Develop **local capability** and model/data content through **public-private** partnership; GRMA, Resilient Planet Data Hub

# RMSG: Strategy in a nutshell

| OBJECTIVE 1: DEVELOPMENT OF OPEN RISK MODELLING INFRASTRUCTURE AND DATA STANDARDS | | |
|---|---|---|
| **IMPLEMENTATION** | **ADVOCACY** | **ENGAGEMENT** |
| Continuous development of open data standards and interoperability tools, building on Oasis LMF and the Open Data Standards it curates. | Campaign to promote use of open modelling platforms and open data standards, across sovereigns, development partners and humanitarian programming. | Strengthen key current technical partnerships, including WB/GFDRR (e.g., through Risk Data Library Standard), The Institutes / Climate Resiliency Council via GXM and interoperability. |
| Improve the range, knowledge and use of open catastrophe risk models on Oasis LMF and other open modelling platforms. | Announcement and continuous promotion of RMSG's technical programme outputs. | Support new IDF technical partnerships, notably Google and exposure data providers. |
| Deliver new, open tools for cross-sector users, including regulators, humanitarians and entry-level public sector users. | Specific advocacy programme for adoption of open risk modelling in NGOs and NDMAs for Anticipatory Action, Anticipatory Finance and Early Warning | Improve technical engagement with Tripartite Agreement partners. Engage humanitarian partners in RMSG technical projects. |

| OBJECTIVE 2: DEVELOPMENT OF LOCAL CAPABILITY AND MODEL / DATA CONTENT | | |
|---|---|---|
| **IMPLEMENTATION** | **ADVOCACY** | **ENGAGEMENT** |
| GRMA: Develop capability and model/data content in Pakistan, Madagascar, Nigeria, Costa Rica and Ghana. Secure new partner countries including Nepal and GS pathfinders. | GRMA: Announcement and continuous promotion of GRMA engagements and successes through IDF channels. | GRMA: Develop partnership with Global Shield process and financing vehicles in pathfinder countries. Close partnership with development partners in countries eg WB, ADB, UNDP, GIZ |
| Regulator training: Deliver training in risk analytics to regulators, in partnership with IDF LRRP Working Group. | GRMA: Advocate a new workstream of risk analytics capability development for humanitarian application | GRMA: Ramp up engagement of IDF member companies and domestic insurers in GRMA country programmes. |
| Resilient Planet Data Hub: Provide secretariat support and technical advice to the RPDH. Include RPDH in GRMA country programmes. | Resilient Planet Data Hub: Promotion of the RPDH internally with industry partners, and externally with public sector, IFIs, regulators and finance sector. | Resilient Planet Data Hub: Engage key partners in the RPDH programme, including re/insurance, UN FCCC, UNDRR, technical & finance sector partners. |

# Programme overview

Commitments under MoU

- Oasis / open modelling infrastructure (~55%)
- Capability dev't and content (GRMA) (~45%)

| Open modelling infrastructure technical work 2021-23 | |
|---|---|
| 2021 | Oasis core coding, run-time performance and user interface improvements; Interoperability; CatRiskTools |
| 2022 | Oasis Risk Explorer; Interoperability tool, OED standard development, fragility functions study. |
| 2023 | Oasis Risk Explorer (Weather Index); Oasis dynamic event set generation; OED/RDLS review; GXM research, scope and MVP proposal; Suite of tools on the RMSG web page |

AIG AON AXA AXIS convex GuyCarpenter HOWDEN RenaissanceRe SCOR The Art & Science of Risk Willis Towers Watson

# Funding: MoU partners 2021-25

| Partner | 2021-22 | 2023 | 2024 | 2025 |
|---|---|---|---|---|
| AIG | | | | |
| Aon | | | | |
| AXA Group | | | | |
| AXIS Capital | | | | |
| Convex | | | | |
| Guy Carpenter | | | | |
| Howden Group | | | | |
| RenaissanceRe | | | | |
| SCOR | | | | |
| WTW | | | | |
| | | | | |

# Global Risk Modelling Alliance

**Sub/sovereign risk applications:**

Risk audit, strategic priorities for DRR → Parametric DRF, operational adaptation projects, DRM → Complex risk transfer

Global, low-res view → Local, high-res view

**Knowledge & people:** GRMA expert practitioners, working on demand-driven projects

**Content:** Global Resilience Index, Climada, global climate and hazard models

Filling model and data gaps
Translating and integrating local data
Exploiting existing models wherever possible

**Open modelling infrastructure:** Oasis infrastructure and Open Data Standards

Oasis Risk Explorer

# Building Capacity - Workshops for Supervisors

## New Supervisors' Workshop Q42023

- Access to Insurance Initiative **(A2ii)** and **IDF (RMSG / Legal & Regs)** co-convened a workshop series dedicated to **insurance supervisors from developing economies.**
- Around **100 supervisors** attended this event.

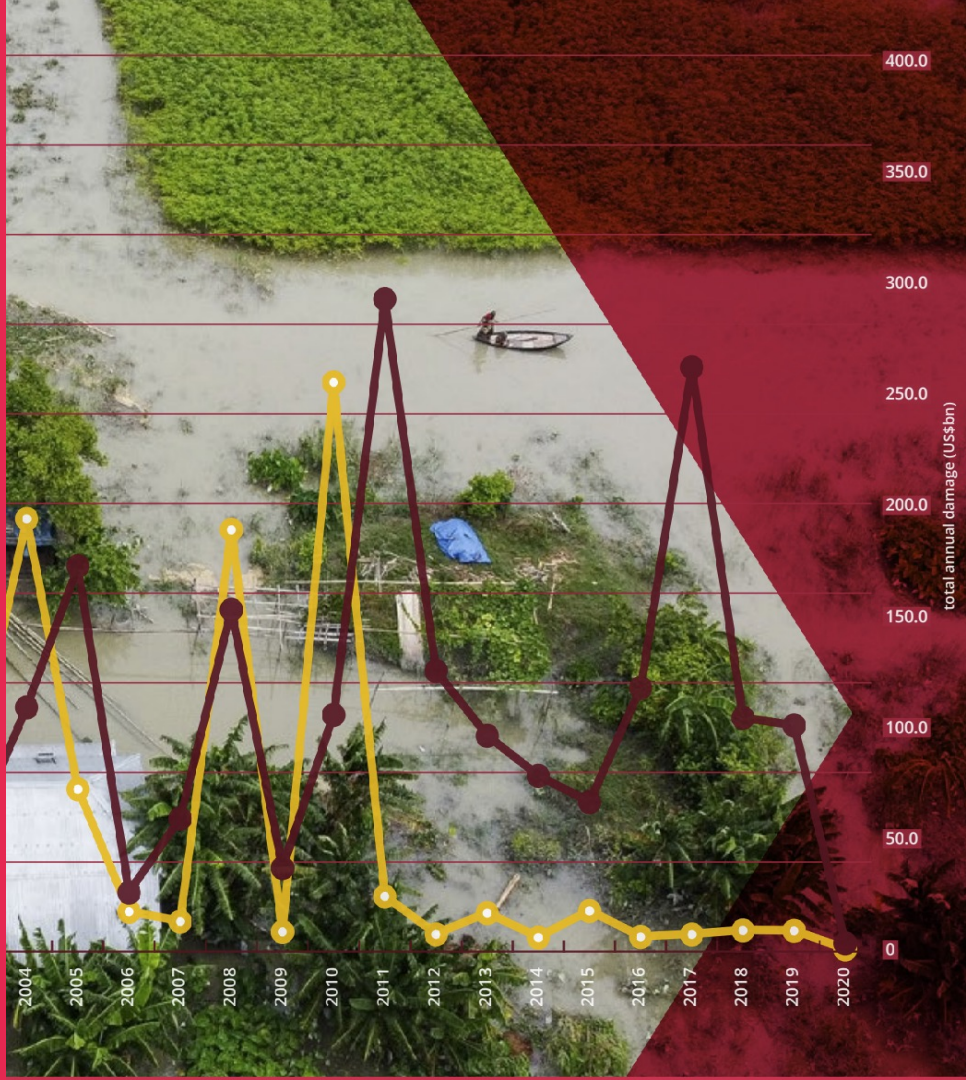
## Focus

- Value of understanding climate and disaster risk
- Use of catastrophe risk models for supervisory purposes

## Focus for 2024

- **Policy focus;** how analytics can support market development, closing the protection gap
- **Technical** - model validation, use of models in specific types of insurance

# RMSG / Oasis LMF technical projects – 2024

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# 2024: Phase 4 RMSG technical projects

| Impact | Project |
| --- | --- |
| Continuous development of open data standards and interoperability | **Propose and deploy standardised documentation for catastrophe models on Oasis**<br>**Publish a set of existing standard high-level vulnerability functions in Oasis file format**<br>**Open Data Transformation Framework interface**<br>**Global Exposure Model data pipeline** |
| Improve range, knowledge and use of open models on the OasisLMF platform | **Populate a library of open access models on Oasis**<br>**Design a formal framework for hosting open access models** |
| Expand cross-sector adoption of insurance risk analytics, methods and tools | **Review and publish a summary of modelling approaches for parametric instruments**<br>**Open tool to combine simulated risk estimates for CDRFI structuring**<br>**Enhance realistic disaster stress test scenarios capabilities in Oasis LMF**<br>**Improve capability for benefit-cost assessment in Oasis** |

# Risk Explorer v2 Launch

James McIlwaine – Maximum Information

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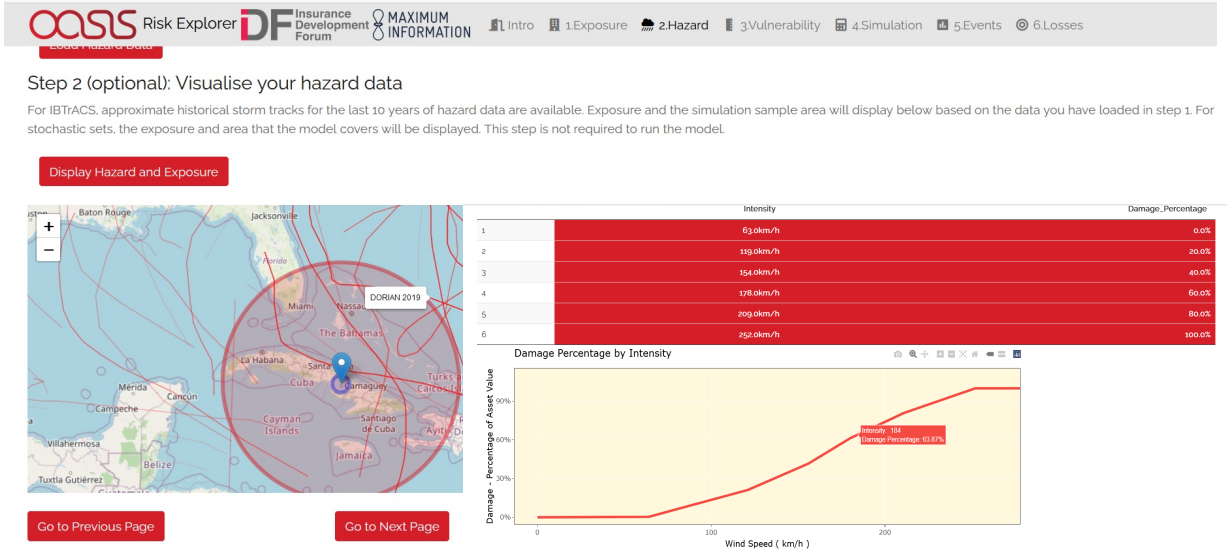
# What is Risk Explorer?




- Version 1 Launched in 2022
- Ability to model **worldwide tropical cyclone** and **earthquake** for specific regions, using **historical** data and selected **stochastic** sets

Version 1 Link: https://idf-rmsg.shinyapps.io/oasisriskexplorer/

**Risk Explorer is a free-to-access, open, educational tool aiming to guide users through the process of modelling catastrophe risk with a parametric insurance use-case**

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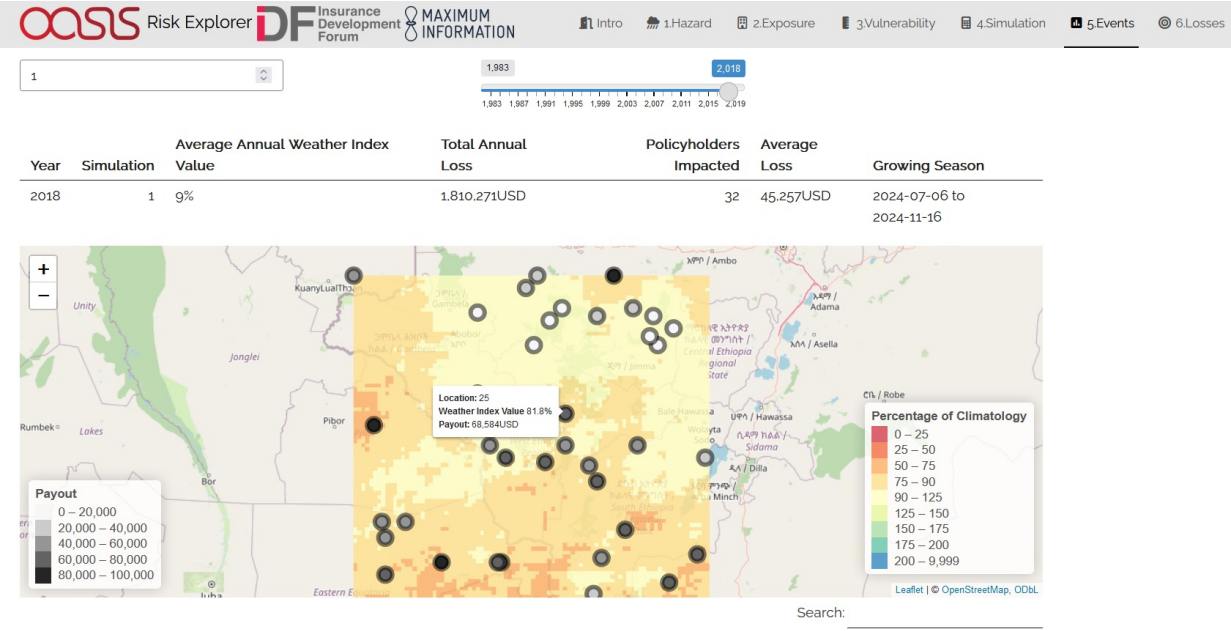
# Risk Explorer Version 2




**Focus for Version 2 has been on incorporating a worldwide drought insurance use-case.** Working with Professor Emily Black (University of Reading), a world-leading expert in weather index insurance

Please come by the MaxInfo / IDF stand to see a demo or sign up to help us test, or drop myself (james@maxinfo.io) or Stuart Fraser (stuart@disaster-risk.uk)

**Worldwide Drought now incorporated into the tool and will be deployed in June using more scalable infrastructure**

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# Introduction

For more detail see the Help page's Introduction section
Please see legal disclaimer before running

## General Overview

Welcome to the IDF Oasis Risk Explorer. **The central purpose of this tool is educational, serving as an introduction to the different considerations that go into modelling catastrophe risk with specific applications to parametric insurance.** The tool is broken into six sections excluding the introduction tab. **Please ensure you consult the help page which can be accessed using the links on each page. When using the tool it is suggested that you navigate through these tabs going from left to right,** as this is the order in which they are intended to be completed.

## What do I need to run the model?

**All you need to run this model is some idea of the location and value of an asset or property in a region prone to tropical cyclones.** If you do not know this but still wish to run the tool, simply enter some made-up values e.g., select a location in the Caribbean gulf or NW Pacific and just enter an arbitrary USD 100,000 asset value.

**You do not need access to your own hazard/event sets to run the model as these are all contained in the tool.**

## Tab Guide: Inputs

The first three tabs require you to enter inputs specific to the risk you are modelling. **These are exposure, hazard and vulnerability and make up the basic building blocks of virtually any catastrophe model.** These are each described in more detail below:

- **Exposure: What are the assets you want to insure?** In this tab you will specify the location and total asset value that you want your insurance to cover.
- **Hazard: Which types of natural perils are you interested in modelling (e.g. windstorm, earthquake)?** What data sources will you be using to model these? These data sources could be taken from the history or generated based on scientific knowledge or statistical techniques.
- **Vulnerability: How do physical events lead to damage to your asset and financial loss?** What intensity measure will be used to calculate damage sustained (e.g., wind speed/pressure etc.)? How much damage is caused for each value of the intensity measure? For example, if you have 100km/h winds vs 200km/h winds how much extra damage will you expect to sustain?

## Tab Guide: Simulation and Outputs

# Risk Explorer Version 2: Demo

**Please come by the MaxInfo / IDF stand to see a demo or sign up to help us test.**

Version 1 of the tool is available at:
**https://idf-rmsg.shinyapps.io/oasisriskexplorer/**

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# Links and contacts

insdevforum.org/rmsg-tools

insdevforum.org/working-groups/rmsg

https://grma.global/

To contribute or learn more, contact:

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