CLIMATE CHANGE SCENARIO ANALYSIS

Volume 1 / Issue 1

DIRTY ADDRESS DATA? NO PROBLEM!

Climate Mapping Services has developed a proven address cleaning and geocoding engine. We use natural language processing and artificial intelligence in order to clean institutions address data in order to enable geocoding. Geocoding process matches institutions addresses to Geocoded National Address File (GNAF) in order to assign latitude and longitude to each collateral address.

GEOCODING AND NATURAL PERIL MAPPING

In order to fully understand and appreciate exposure to different perils, exposure needs to be modelled at a property level versus current practice of modelling at a Postcode or LGA level. This enables institution to better price for risk and avoid building concentrations to different natural hazards. For example, two properties located on the same street one located at a top of a hill and other at a bottom of the hill will have different exposure to flood risk.

An example of the natural peril analysis derived for each property is illustrated in the following table.

Site: 61 Bunya Street, Greenslopes, Queensland 4120 Australia

Return Period (Years)	Flooded (River Undefended)	Flooded (Surface Water)	Defended (River)
20	Y	Y	N
50	Y	Y	N
100	Y	Y	N
200	Y	Y	N
500	Y	Y	N
1500	Y	Y	N

This table shows that the property chosen is exposed to both river and surface water flood under every return period. Next table shows the level of water inundation in meters faced by the property under different return periods.

Return Period		Indicative water depth (Undefended River, m)				Indicative water depth (Surface Water, m)			
Years	AEP*	PAA* (%)	min	max	mean	PAA* (%)	min	max	mean
20	5.0%	17.30	0.01	5.04	1.41	3.17	0.15	2.47	0.40
50	2.0%	24.00	0.01	6.63	2.12	4.06	0.15	2.83	0.47
100	1.0%	28.09	0.01	7.42	2.47	4.97	0.15	3.03	0.49
200	0.5%	31.25	0.01	7.98	2.76	5.72	0.15	3.23	0.52
500	0.2%	33.58	0.01	8.49	3.06	6.55	0.15	3.48	0.54
1500	0.067%	35.36	0.01	8.86	3.28	7.83	0.15	3.72	0.54

WHAT ABOUT SCENARIO ANALYSIS

Whilst traditional stress testing focus for the Banking industry has been on macroeconomic shocks and modelling of credit losses associated with the same, with insurance premiusm rising and becoming unaffordable, there is a risk that customers will or already are opting out of insurance or particular natural hazard cover like flood. The risk that insurers were typically underwritting could be passed over to customers and ultimately Banks in instances where the property is damaged and customer defaults.

Whilst the above example shows flood risk for a property as of today, using Hydro 2D modelling we have the ability to obtain bespoke climate change scenarios that could simulate different natural hazard events. For example, a significant rain event could be simulated with rainfall targeted at a particular area, flow of water would be modelled and institutions collateral addresses would be mapped against the flow of water. This would identify properties affected by the event and damage from the event could be modlled. This in turn would emable assessment of change in the Loan to Value ratios (LVR's) for the impacted properties and enable loss given default calculations creating useful insights and enabling lenders to have those conversations with customers located in high risk area's ensuring adequate insurance is held.

HOW LONG DOES THE GEOCODING AND SCENARIO ANALYSIS PROCESS TAKE

Depending on the scope of the project as well as the quantum of properties modelled the entire end to end process can take as little as few weeks to a few months. As a rule of thumb, up to 1 million addresses can be cleaned and geocoded in a week. Applying flood and other peril mapping to geocoded collaterall is usually very fast with majority of the project time being spent on analysing outputs and generating insight reports. For your specific project needs please contact us @ info@climatemappingservices.com

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