

EGU2020-9877

<https://doi.org/10.5194/egusphere-egu2020-9877>

EGU General Assembly 2020

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## Climate risk score – a framework to quantify an insurance portfolio's exposure and contribution to climate change

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The (re)insurance industry is alarmed that trends resulting from changing climate extremes may not be correctly reflected in its models, which are typically calibrated on past data. However, depending on the region and the peril, these trends vary in direction, magnitude and confidence level. A climate risk score framework has been developed that allows to identify regions or insurance portfolios which are particularly exposed to the consequences of climatic changes. In addition, the score also highlights a portfolio's contribution to climate change which eventually translates into a transitional risk – the risks emerging from the transition to a low-carbon economy.

The climate risk score is based on several sub-scores which reflect expected changes in mean and extreme precipitation and temperature as well as in mean sea level rise. It is computed using data output from several CMIP5 models – the models that lay the data foundation of the recent IPCC reports. In addition, the Swiss Re proprietary storm surge zones as well as its pluvial and fluvial flood zones are incorporated, allowing for a risk view in high-resolution (30 m). The contribution to climate change is displayed qualitatively, based on the occupancy of the individual sites of the portfolio.

Using this framework, the climate risk exposure of individual insurance portfolios can be assessed over time, across different RCP scenarios, or against an overall market portfolio. These insights can amongst others be used to steer a portfolio, or to judge past and expected changes in portfolio profitability and may thus also influence underwriting decisions. This may be particularly relevant for portfolios that are exposed to so-called secondary perils, i.e. high-frequency loss events of low-to-medium severity. Furthermore, regions can be identified, where uncertainties are particularly high and a more in-depth analysis of existing models might be required.