A changing risk landscape –
How can we quantify?

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1. What an insurance company is doing
2. How adequate premium is determined
3. A changing risk landscape
4. Living the uncertainty
5. Conclusion
What an insurance company is doing –
Some basic principles to start with

Your annual premium = your annual expected loss
How adequate premium is calculated –
Loss pattern over time

Ultimate goal: calculate adequate and sustainable premium
How adequate premium is calculated – Major loss drivers

Two major drivers: Portfolio and environment
How adequate premium is calculated – Probabilistic models can help

- Hazard Module: Event Set
- Geography: Where
- Vulnerability: What
- Financial Module: How

Exposure Data → Exposure Data → Insurance Conditions

What about change?
A changing risk landscape – How my major drivers behave

Basic Losses

Cat Losses

Change over time challenges sustainability
A changing risk landscape – Portfolio over time

Ultimate goal and difficulty – Capture adequate information

Ocean Drive, FL, 1926.

A changing risk landscape – Environment over time (Climate change)

Time series of temperature, tropical storms and hurricanes

Climate change – Split natural pattern from trend
A changing risk landscape –
Environment over time (Changing knowledge I)

Start to think the unthinkable (9/11, Katrina, Tohoku)

Heaton and Kanamori, 1984
A changing risk landscape –
Looking into the Past and Model the Present

Losses due to Atlantic hurricanes - inflated

Pielke et al., 2008
A changing risk landscape –
Looking into the Past and Model the Present?

Losses due to Atlantic hurricanes – inflated and normalized
A changing risk landscape – Environment over time (Changing knowledge II)

Looking back into history is not enough anymore

Skilled forecasting provides business advantage

- Prevents risky decisions
- Enable real premium adequacy
- Prevents losses
- Supports portfolio diversity
- Opens new business fields

The past is the key to the present – the model is the key to the future
A changing risk landscape – 
Short term forecasting as premium client service

Weather Save Mobile App, powered by MeteoGroup

- Location based Service – Predefined
- Covering basic Parameters – Temperature, Precipitation, Wind
- Event Warning – Thunderstorm, Heatwave, Rainfall
- Target Coverage – Global

Single Client gets Alerts and Advice on upcoming Events
- Anticipated loss reduction
- Marketing
A changing risk landscape –
Short term forecasting as premium client service

β Location based Service –
   Predefined

β Covering basic Parameters –
   Temperature, Precipitation, Wind

β Event Warning –
   Thunderstorm, Heatwave, Rainfall

β Target Coverage –
   Global

What about the risk of “False Alarm”?
A changing risk landscape –
Short term forecasting for efficient claims service

Regional alert on upcoming events
• Prepare claims service
• Provide background information

~ 1984 Munich
A changing risk landscape – Mid to long term forecasting for portfolio steering

Summary of Key Takeaways

- 2011 seasonal forecasts call for an above average hurricane activity in the Atlantic basin.
- La Niña conditions will diminish during the season. Expected neutral conditions will only modestly increase the risk of elevated hurricane activity.
- Seasonal forecasts are meant to provide an indication of activity in the upcoming season relative to average.
- Major forecast skill only becomes apparent close to the season’s inception.
- Recent seasonal forecasts include landfall forecasts in the form of projected probabilities. However, because landfall is highly dependent on short-lived and difficult to predict steering currents, landfall prediction is not very skillful up to now.

Regional activity forecast for tropical storms North Atlantic
- Rather good skill in number of storm
- Not very advanced when it comes to landfall
A changing risk landscape –
Quantify the beast

Porfolio
- Capture data on a standardized base
- Get a common understanding

Environment
- Understand natural patterns
- Looking into the past and model the present
- Capture future trends (Forecasting)

What about uncertainty?
Statistically significant changes in the 20 year return period precipitation (%)
Conclusion on a changing risk landscape

- Major loss drivers (Portfolio and environment) are changing in time
- Looking backwards is not enough anymore
- Skilled forecasting is crucial for future business
- Uncertainties need to be understood

Remember: calculate adequate and sustainable premium