

KNGMG – TUDelft, 01 February 2018

The Science behind the Groningen Gas Field

Symposium on seismicity induced by gas production from the Groningen field

**SPOKEN COLUMN – Science meets Society – How to communicate complex issues?**

## **EUPHORIA OR FAILURE?**

Today we celebrate the progress we, as a scientific community, have made in our quest to better understand a wide range of aspects related to the induced seismicity in and around the Groningen gas field. We now know so much more than five years ago, when the Huizinge earthquake rattled Groningen. And we are proud to share our knowledge ... at least with our peers by means of this meeting and the special issue of the Netherlands Journal of Geosciences.

Scientifically, Groningen has become probably the best monitored and studied case of induced seismicity. We have a robust reservoir model; we learn more about the mechanical behaviour of the reservoir and fault rocks; the faults in the reservoir are better defined based on seismic attributes, the subsidence model is refined; the geomechanical models for forecasting the induced seismicity are further developed; ground motions are better constrained; seismic hazards are refined taking into account the improved ground motion models; fragility of building types are determined; and a comprehensive hazard and risk model is developed and fine-tuned.

The models are even so well performing that earthquakes with a relative high magnitude, such as the recent Zeerijp earthquake, are no longer considered as unanticipated seismic events. After all, they fall within the anticipated range of the hazard and risk models.

But do the people, that are shaken up last month by the Zeerijp earthquake, share the euphoria of the scientific community? Or do they rather perceive this as an expression of our unworldliness, or even our scientific arrogance?

The people of Groningen, living in fractured houses in Loppersum, Bedum or Appingedam, are just outraged when they hear that the Zeerijp earthquake fits the model, because they just don't want any Zeerijp earthquake anymore. The people in

Groningen don't care at all about the latest version of the seismic hazard map that will be published shortly by the KNMI. The people in Groningen just want to know if they can finally start repairing the cracks in the walls of their living room; they want to know if their kids can sleep safely in their rooms under the roof; they want to know when they will be relieved of the burden of being regularly shaken up by earthquakes.

If we, in all honesty, take a look at ourselves in the mirror, we can only admit that we have to a certain extent failed as a scientific community. We have to date not really been able to address the true concerns of the people affected by the induced seismicity. We have failed to give satisfactory answers to their specific questions. We have insufficiently taken the trouble to invest in building a public science, that enables the people involved to properly assess their personal risk perception, and that enables the policy makers to take relevant decisions. We have to a certain extent neglected to try to correct bad policy decisions. Only yesterday, after 5 years, the wretched 'contour' limiting the so-called 'earthquake zone', has finally been left out in the new damage protocol.

To date, we first of all have generated a lot of suspicion and distrust. Even to the point that the validity of the magnitude of the Zeerijp earthquake has been questioned recently. And as the national coordinator for Groningen once said: "*Trust arrives walking and departs riding*". Unfortunately, this also applies to the trust of the people in Groningen in the scientific community.

The Zeerijp earthquake last month, although being anticipated by the models, unexpectedly opened a 'window of opportunity', also because it occurred early in the office of Eric Wiebes, the new minister of Economic Affairs and Climate Policy. All of a sudden, everything is gaining momentum, the damage protocol, the implications of the traffic light system on the gas extraction, following the advice to the minister of the regulator SodM, made public this morning.

The question now is what we, as the scientific community, are going to do. Are we going to stay in the comfort zone of our labs and offices, of scientific meetings and peer-reviewed journals? Or are we finally going to fully assume our societal role, first

of all by starting to listen to the 'forgotten people of Groningen'. Are we going to invest in a dialogue with the people affected by induced earthquakes to eventually build that public science, of which they can claim the ownership and we guarantee the scientific validity.

It's our choice now to embrace this unique, and most probably our last, opportunity to regain the trust of the public in the scientific community; to become truly a respected partner in addressing the concerns of the people of Groningen. Just remember: you never let a good crisis go to waste!

*Manuel Sintubin*

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