

Continental Shelf Aquifers in International Law

*(In-between) Law of the Sea,
Energy Law and Water Law*

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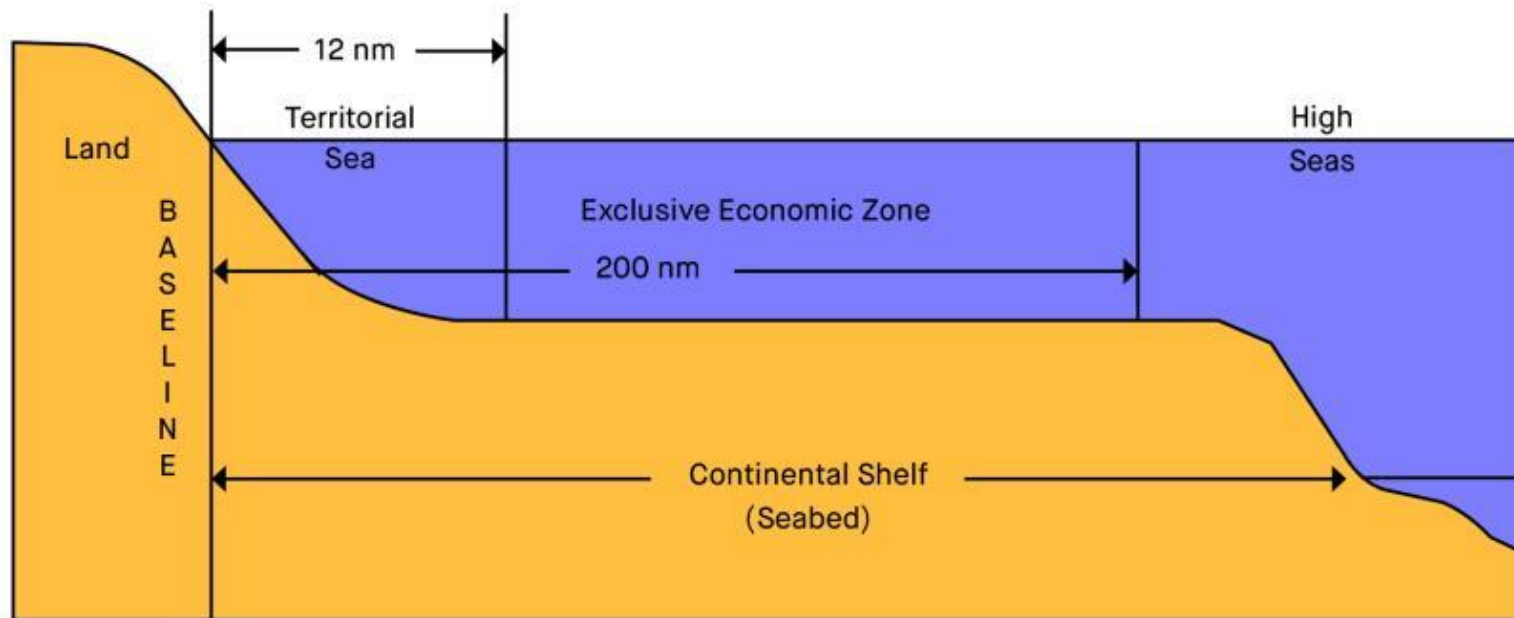
What are we talking about?

- 2013 Nature article V. Post et al '*Offshore fresh groundwater reserves as a global phenomenon*'
Compilation of decades of marine hydrogeology studies
- Vast Meteoric Groundwater Reserves
- Located in continental shelves around the globe
- Part are fossil aquifers
- Fresh/brackish water (10g l⁻¹)
- Two orders of magnitude the volume extracted from land-based aquifers in past 100 years estimated



What are we talking about?

Maritime zones



Maritime Boundary Office, Timor-Leste, <http://www.gfm.tl/learn/the-law-of-the-sea/>



World map of topography and bathymetry showing known occurrences of fresh and brackish offshore groundwater

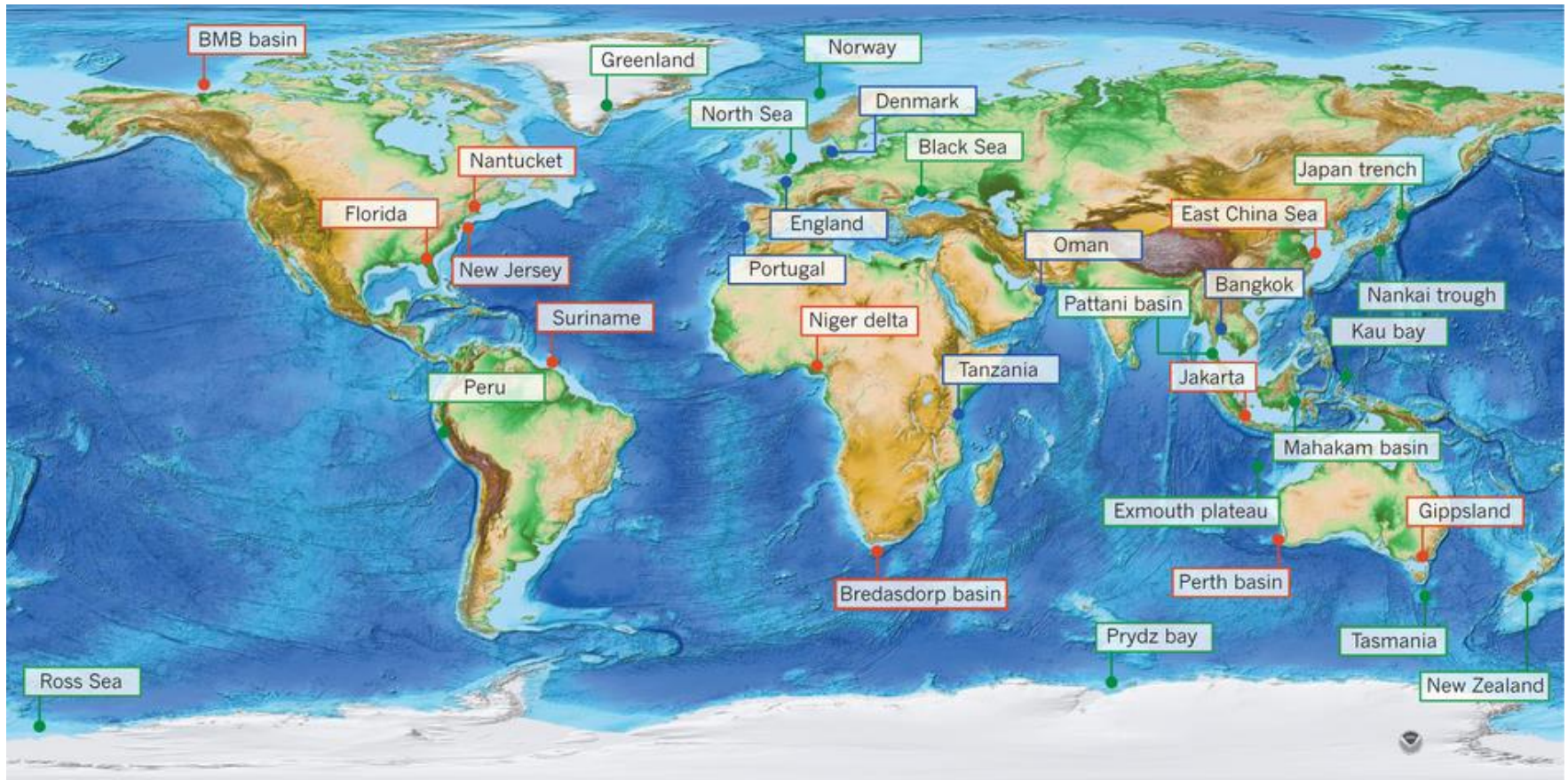
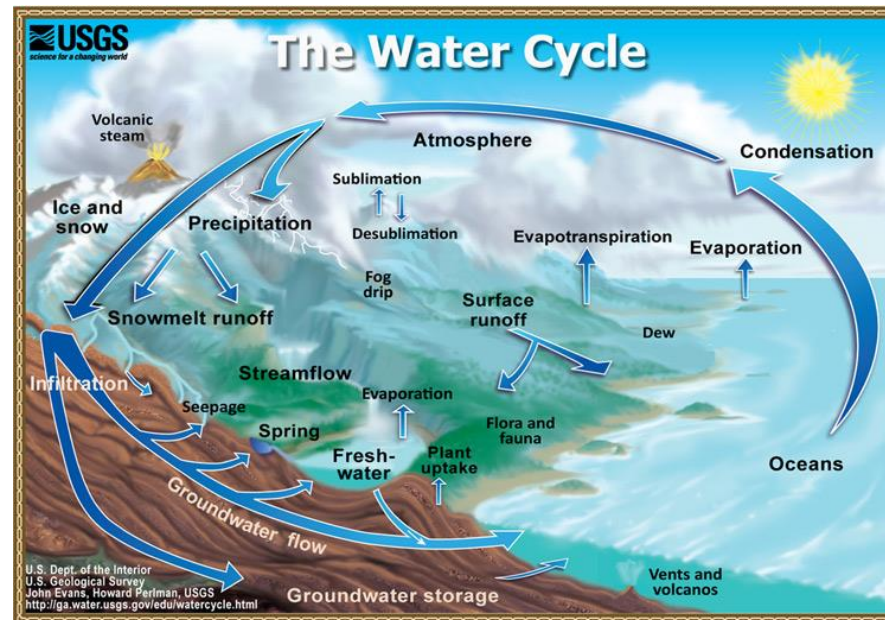


Fig.1, in Vincent E. A. Post, Jacobus Groen, Henk Kooi, Mark Person, Shemin Ge, W. Mike Edmunds, 'Offshore fresh groundwater reserves as a global phenomenon' (2013) 504 Nature 71.

Why does it matter?

- Challenges 'traditional' water cycle



- “Forgotten” from PIL: legal loophole (e.g. exploration, exploitation, protection)

Why does it matter?

- “Global water crisis”. Especially coastal zones:
 - Will face largest migration pressures ([WWAP 2009](#))
 - Already 50% world pop within 60km of the sea ([UNEP 2014](#))
 - 75% all large cities located on the coast ([UNEP 2014](#))
 - 55% increase in global water demand between 2000-2050 ([OECD 2012](#))

- Technology available and seems financially viable, although unknown/uncertainties remain

But caution required

- More technical studies are needed
- Only portion is exploitable
- Precious resource, partly fossil = non-renewable
- Other factors to take into account:
Contribution of groundwater pumping to sea-level rise → displacement/relocation
Potential onshore impacts
- Focus on better managing our land surface and groundwater resources, in a more efficient and sustainable manner
- Depending on context, could be a necessary and interesting ‘localized’ solution
- In order to ensure proper protection of the resource and proper regulation of their potential use, the legal loophole needs to be addressed →

What bodies of public international law?

Characteristics of these offshore aquifers → 3 main bodies of IL appear as potentially relevant:

- **Geographical location:** Law of the Sea
- **Exploitability/Management:** International energy regulations (cross-border, offshore exploitation)
- **Nature:** International water law (cross-border)

Other rules: e.g. right to water, obligation to cooperate, environment/investment, regional/local regulations



Moving forward

- Depending on context and local necessities countries might come to an agreement using LOS and energy oil/gas cooperation agreements in case of cross-border VMGRs
- Aim at practical/efficient/quick legal tool which would set overall protection/preservation/sustainable&effective management frame:
 - ➔ Set up of UN ILC working group with relevant technical and scientific assistance, with a view to discuss and address this legal loophole. UN Resolution recognizing strategic importance & fragility of the vital resource. Ref to right to water

Conclusions

- Fascinating forward-looking topic for the future of water resources management. Where a lot still needs to be done and should be done wisely, quickly, efficiently, based on previous experience. Great opportunity to engage with experts outside the traditional water box
- Fragile, partially non-renewable, vital resource
- Encourage more technical studies to be done
- Necessity of legal framework/umbrella, ahead of exploitation which may become an option or necessity for some countries. Particularly highlighting importance of resource and seeking cooperation between countries in the case of a cross-border offshore aquifer



THANK YOU

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