Expressing Linguistic Neutrality, Uncertainty, Incompleteness in Word-Based Descriptions of the Seabed

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Introduction.

Neutrality, uncertainty and incompleteness are very important concepts for handling word-descriptions of the everyday and also in technical descriptions, such as of seabed geological materials. Their impact is judged relative to some parameter or character of the materials – such as grainsize (texture), colour, composition, or consolidation.

Details.

<u>Neutrality</u>: when a term has no meaning in or influence on the parameter which is being analysed. For instance in "greyish medium sand", the colour term "greyish" is neutral for grainsize. It neither holds material relevant to sediment texture, nor modifies for texture in any way. These terms are ignored for the analysis of the parameter.

<u>Uncertainty:</u> when a term has an ill-defined meaning for the parameter being analysed. For example in "sediment with some gravel"** the term "sediment" represents material having grainsize, but the grainsize is unspecified. That leaves the textural nature of the material largely unknown. However, in another case "99% coarse gravel; rest sediment" the uncertainty is very small, and the overall texture is clear. (In dbSEABED descriptions with uncertainties <u>></u>5% are failed. At this level of QC many descriptions fail.) <u>Incompleteness:</u> when a description is significantly incomplete, such as in "sand etc", or "sandy". The same occurs when a term is not recognized in the dictionary as in "sand with xxxxxx"**. The component/object/feature of the last term could be so large as to determine the material almost by itself.

Implementation.

In the above starred "**" cases the parsing/analysis in dbSEABED fails. In the processing of each description, uncertainty per parameter is first set to 100%, and reduced as definite components are identified. If, finally, the uncertainty remains \geq 5%, there will be no output generated except for a report to diagnostics. Similarly for incompleteness since that also contributes to the uncertainty metric. The presence of a neutral term for a parameter has no effects on the final outcome, but will have for its own parameter/s.

References.

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