

1.1.3. What to Keep in Mind

- Scientists strictly distinguish between plausibility, validation, and verification (ascending order of stringency). The definition of verification used here as a reference is taken from the IPCC (2000: Annex 3). It is sufficient as it specifies verification towards the intended purpose of the Kyoto Protocol, which can only be done from an atmospheric point of view: *What matters is what the atmosphere sees!* Net emission assessments based on inventories and other bottom-up approaches can only be checked with the help of independent top-down atmospheric storage measurements.
- We recognize that bottom up–top down (*two-sided* or *dual-constrained*) verification on the spatial scale of countries,¹ which permits discriminating a country's *Kyoto biosphere* from its *non-Kyoto biosphere*, is unattainable.² This is the reason why bottom up–top down verification must be complemented by temporal verification.³
- For a number of reasons (see Section 1.1.2), VT calculations are carried out on the global scale. However, the key idea underlying these calculations is that temporal verification conditions on sub-global scales are simulated.
- This research addresses temporal verification of GHG emission changes (also termed emission signals) under the Kyoto Protocol. In this context, the term *risk* refers to the degree of probability, with which the VT of a GHG emitting or absorbing system can be specified, while its (linear) dynamical behavior is assumed not to change.
- Here, the temporal verification concept is applied diagnostically. However, it can also be applied prognostically. In this context, we note that this is when the term *temporal verification* becomes misleading and should be replaced by the term *signal detection*. (Prognoses can, as a matter of principle, not be verified.)
- In general, the literature references mentioned in this Excel file can be found in Hudz (2002). However, if this is not the case, the additional references are provided in footnotes.

¹ The country scale is the principal reporting unit requested for reporting greenhouse gas (**GHG**) emissions and removals under the Kyoto Protocol.

² The part of the terrestrial biosphere, which is affected by Kyoto compliant **LULUCF** (land use, land-use change, and forestry) activities, is hereafter referred to as *Kyoto biosphere* and its complement as *non-Kyoto biosphere*.

³ There is no restriction on the spatial scales. Under temporal verification, they can refer, e.g., to any sub-national GHG source or sink.