<table>
<thead>
<tr>
<th>Indicator name</th>
<th>Coefficient of variation for climate moisture index</th>
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Prepared by Water Systems Analysis Group, University of New Hampshire (UNH)

Example WWDR2, Section 4, Global Map 7

Rationale The Coefficient of Variation (CV) Index for the climate moisture index (CMI) is a statistical measure of variability in the ratio of plant water demand to precipitation. It is useful for identifying regions with highly variable climates as potentially vulnerable to periodic water stress and/or scarcity.

Position in DPSIR chain State

Definition of indicator Ratio of standard deviation to mean per grid cell along river network for 36 year time series.

Underlying definitions and concepts The indicator is based on the following definition:
- Precipitation time series fields
- Potential Evapotranspiration (optimal plant water demand) time series fields

Specification of determinants needed Gridded precipitation fields (1960-1995, monthly precipitation per grid cell)
Gridded potential evapotranspiration fields (1960-1995, monthly evapotranspiration per grid cell)

Computation The indicator is computed as:

\[
\text{CMI CV} = \frac{\text{StdDev(CMI)}}{\text{Mean(CMI)}}
\]

Where:
- StdDev (CMI) = standard deviation of the CMI over the 51 yr time series (1950-2000) per grid cell;
- Mean(CMI) = mean annual CMI over the 51 yr time series per grid cell.

Units of measurements This is a ratio and therefore has no units.

Data sources, availability and quality All data for this indicator is available from the Water Systems Analysis Group at University of New Hampshire: http://wwdrii.sr.unh.edu/download.html. (Accessed March 2009)
<table>
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<th>Scale of application</th>
<th>Local for basins exceeding 25,000 km² (within a city or community); regional (within a sub-national region); national (for a country); international (across several countries or globally).</th>
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| Geographical coverage | Global, gridded dataset at 30-minute grid cell resolution  
Africa, gridded dataset at 6-minute grid cell resolution |
| Interpretation | The Coefficient of Variation (CV) is a statistical measure of the potential seasonal and interannual fluctuations in water availability for regions. Increased climate variability indicates larger year-to-year fluctuations, and hence, less predictability in the climate. Increased CMI CV often occurs along the interfaces between humid and dry, for instance, in the Sahelian region of Africa and in the North American Great Plains. These are areas known for periodic, severe droughts and water scarcity. |
| Linkage with other indicators | This indicator represents one in a group of indicators dealing with water availability as a function of climate. Other indicators in this group include: Climatic Moisture Index (CMI) |
| Alternative methods and definitions | The CMI ranges from –1 to +1, with wet climates showing positive values and dry climates negative values. As important as the baseline CMI is, its variability over multiple years is also critical in defining reliable water supplies. This is measured by the so-called coefficient of variation (CV), defined as the ratio of year-to-year deviations around a long-term annual mean. A value of CV < 0.25 is classified as low variability; 0.25 to 0.75 moderate variability and > 0.75 high variability. |
| Related indicator sets | None reported |
| Involved agencies | Water Systems Analysis Group, University of New Hampshire  