Methodology for the Attribution Calculations:

**Time Frame:**
Emission start and end dates 1890 and 2000

**Historical Emissions:**
CO2: Historical emissions based on CDIAC. Future Emissions based on IPCC SRES A2 Scenario.
CH4, N2O: Historical emissions based on EDGAR database. Future Emissions based on IPCC SRES A2 Scenario.

**Countries/Regions**
The four groups of countries are considered: OECD90, REF (Eastern Europe and Former Soviet Union), ASIA, and ALM (Africa and Latin America).

**ISAM Model Parameters**
Reference ISAM model parameters are used, which were also used for the IPCC TAR calculations and UNFCC phase I assessment exercise. Ranges of ISAM model parameters are described in the carbon cycle chapter of IPCC WGI TAR and Kheshgi and Jain (2002). A brief description of the various components of the ISAM was provided with the description of UNFCC Phase I results.

**Attribution Calculations**
Step 1: Calculated global mean concentrations, radiative forcings, temperature change and sea level rise ($G$)

Step 2: Calculated concentrations, radiative forcings, temperature and sea level changes by assuming one of the regions ($i$) emissions zero over the time period 1890-2000 ($G - Re_{gi}$, where $i$ =1,4)

Step 3: The relative contribution ($RC_i$) for a given region ($i$) is then calculated based on the simple linear scaling method:

$$RC_i = \frac{(G - Re_{gi})}{\sum_{i=1}^{4}(G - Re_{gi})}$$
The sum of all $RC_i$ is equal to global value $G$, i.e.,

$$G = \sum_{i=1}^{4} RC_i$$

**Results Provided**

**ASCII Files:**
1. Cumulative emissions for CO2 (fossil fuel and land use), N2O and CH4.
2. Concentrations for CO2, N2O, and CH4.
3. Total radiative forcing (CO2+CH4+N2O+Aerosols), Temperature change and sea level change (only the thermal expansion component).

**Graphical Results:**
1. Attribution calculation results for temperature change
2. Attribution calculation results for sea level change (only the thermal expansion component)

**Reference**