ICTP

- Publications
  - WGSIP CHFP paper to appear in BAMS in November
  - coauthored chapter in S2S book (editors Andy Robertson and Frederic Vitart)
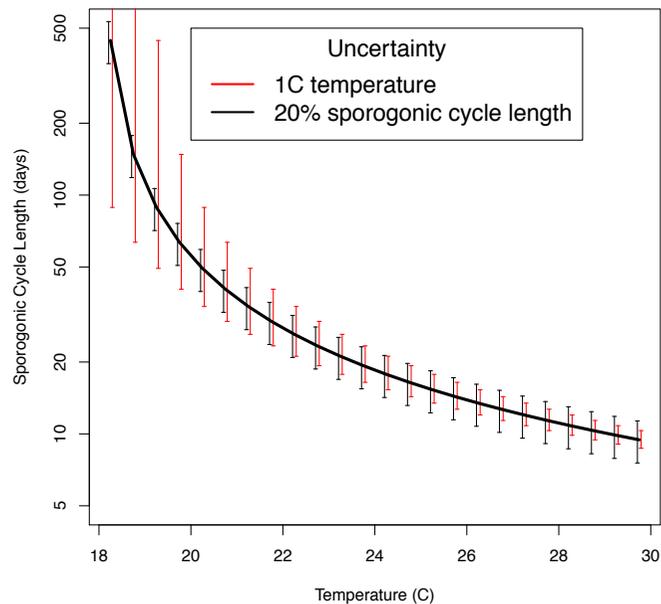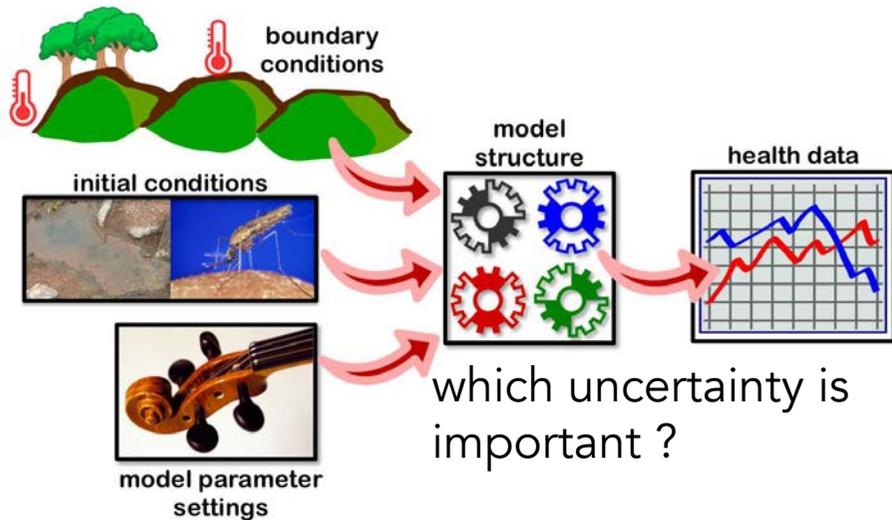 - Health Early warning Uganda in WMO-WHO book and PNAS next month
  - Work on importance of entrainment on convective organization when using grey –zone resolutions published in JAMES
- Developments in S2S-seasonal health impacts:
  - Automated genetic algorithm for calibration (IRI, PLOS)
  - Numerous numerical and process improvements (e.g. immunity, hydro).
  - Malaria seasonal forecast system set up with SYNTEX2-driven VECTRI with JAMSTEC for S. Africa
  - Guidance given to Médecins Sans Frontières (MSF) for recent trends in highland malaria in eastern Congo (with Uni Liverpool)
  - New project on dengue prediction with NUS and government of Singapore.
- Workshops:
  - S2S teleconnections workshop next week at ICTP
  - S2S workshop at EAIFR (Rwanda) postponed to 2018
  - ICTP Summer School on Theory, Mechanisms and Hierarchical Modelling of Climate Dynamics: Multiple Equilibria in the Climate System June 25 2018 (annual event with focus each year)
  - Next call deadline for proposals: March 2018 for 2019 activities

Malaria in Kenyan highlands

boundary conditions

initial conditions

model structure

health data

model parameter settings

which uncertainty is important ?

Only calibration of malaria model parameters

Only calibration of driving climate data

(a)

percentiles (n=80)
- 0.05–0.95
- 0.2–0.8
- 0.33–0.66

(b)

percentiles (n=80)
- 0.05–0.95
- 0.2–0.8
- 0.33–0.66

Uncertainty
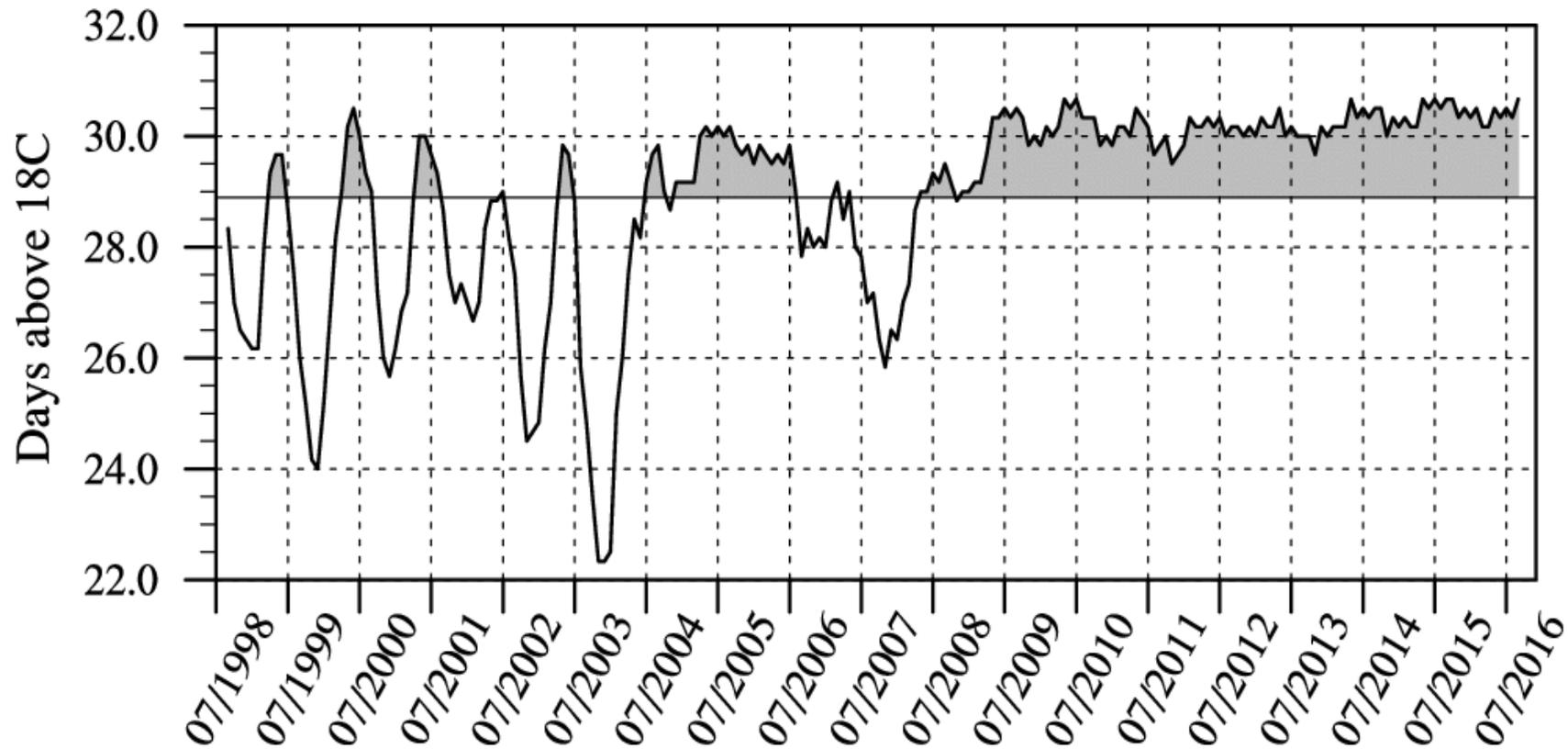- 1C temperature
- 20% sporogonic cycle length
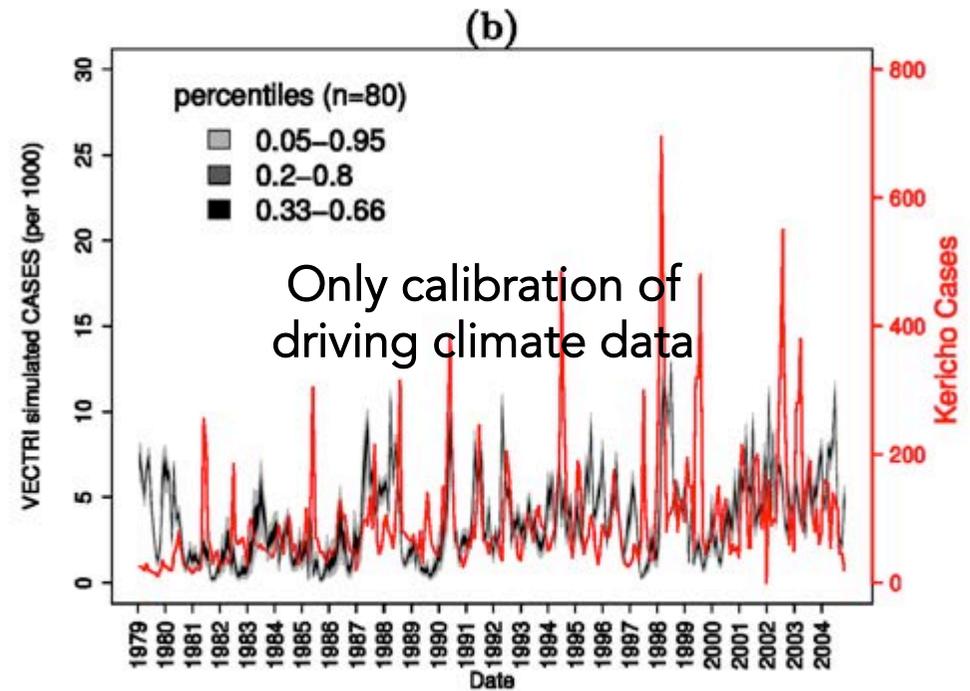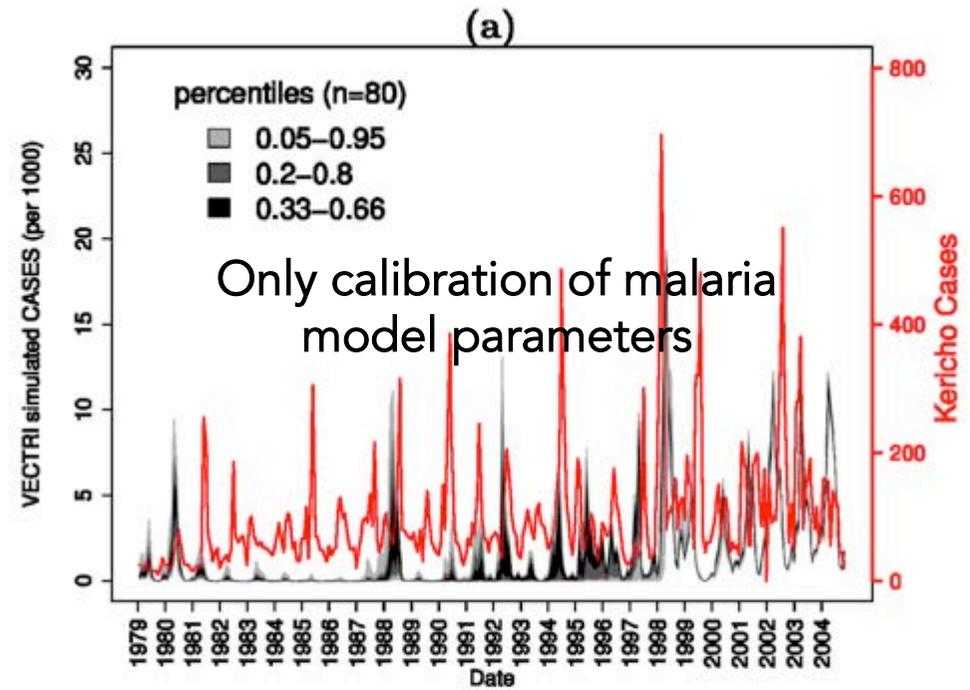
Médecins Sans Frontières (MSF)

- MSF approached ICTP and U.Liverpool with a problem.
  - In Eastern DR Congo highlands they have seen drastically rising levels of malaria since 2015
  - They wanted to understand what might be causing this (climate, migration, conflict, health systems breakdown) and if it might be a temporary
- The uncalibrated VECTRI (ICTP) and LMM (Liverpool) models were set up to run with identical climate forcing (ERAI+TRMM) to simulate malaria in the region
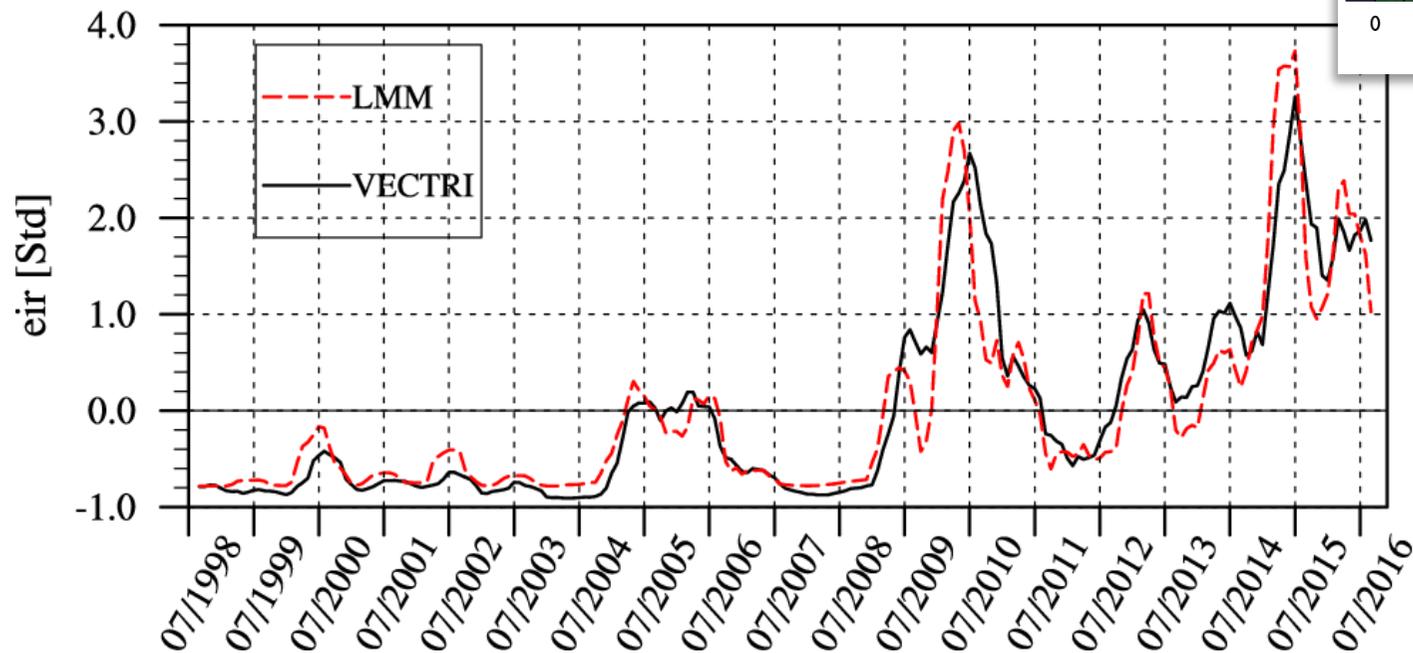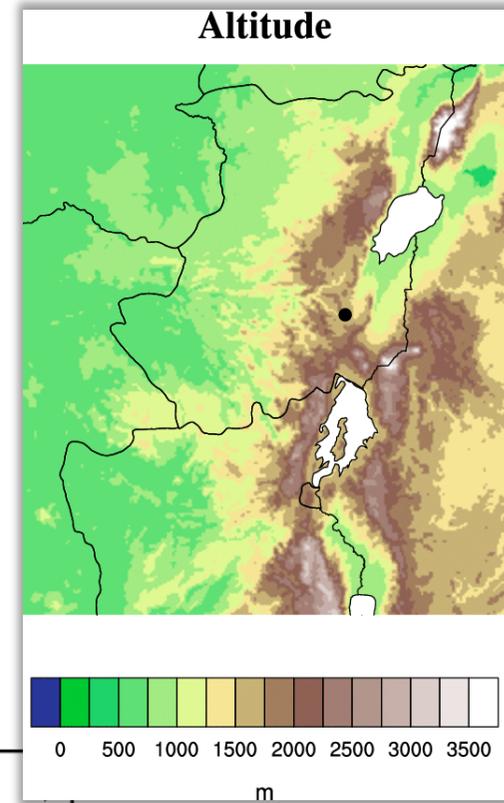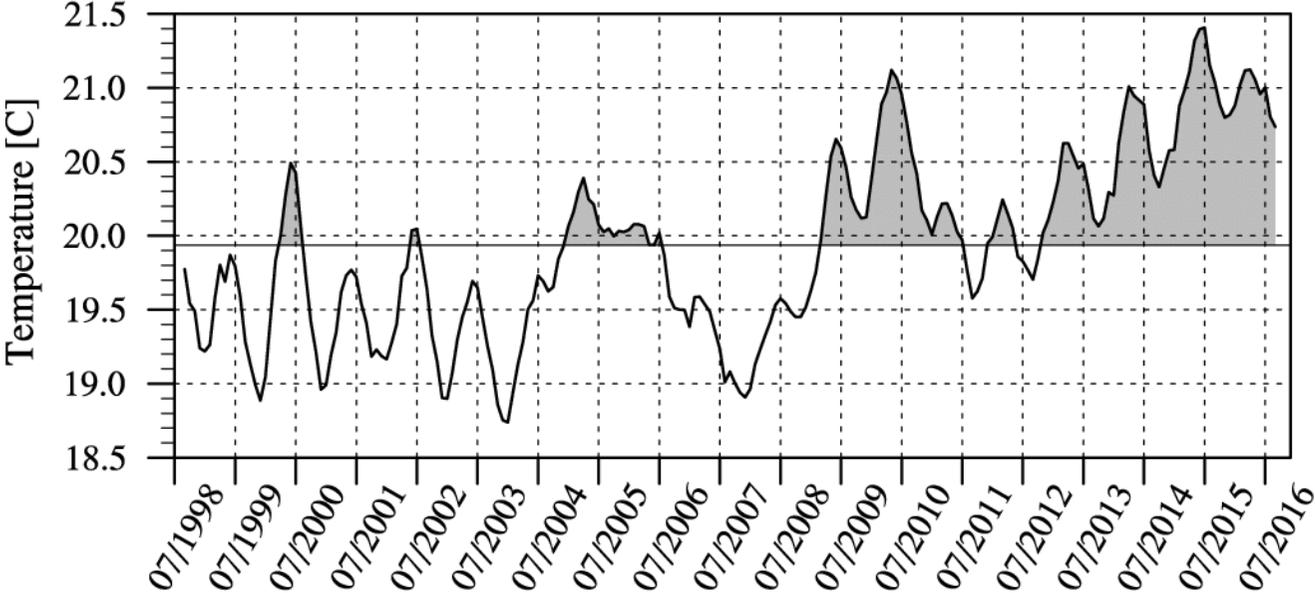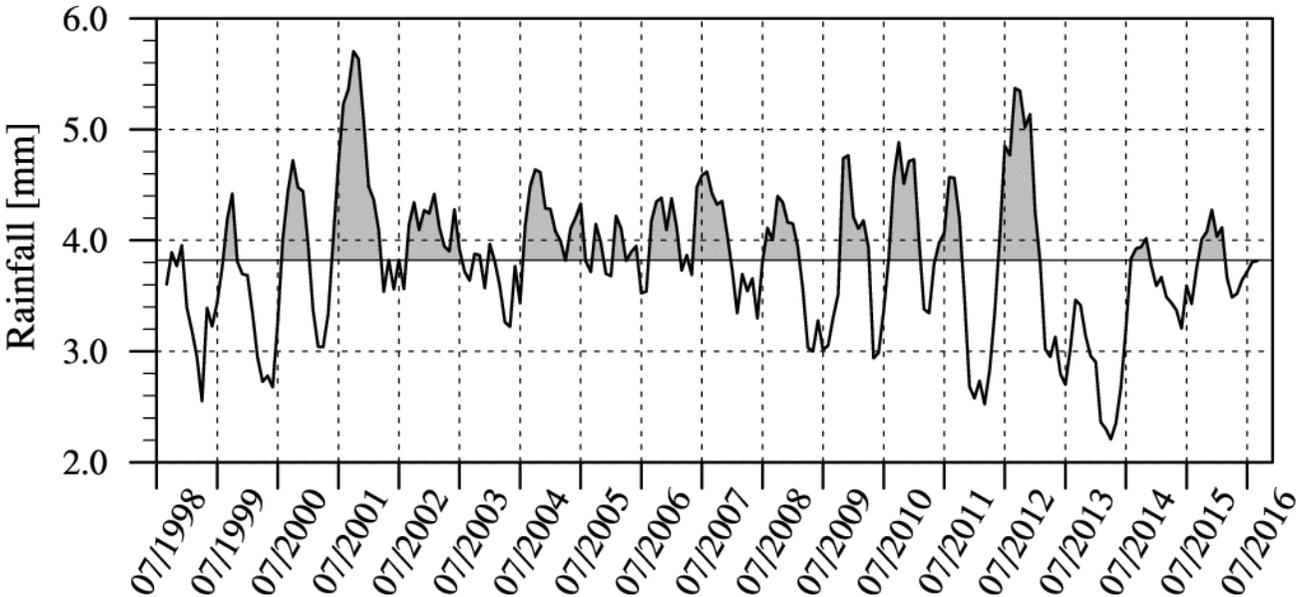
Where is this from ?

Days above 18°C (theoretical minimum temperature threshold for the parasite to replicate inside the mosquito vector) for the same location. The shaded area depicts values above the average. 6 months running average was applied to the data.

Climate (6 month running averages)

ERA-Interim

ENSO events clear on top of recent warming trend

TRMM Rainfall [mm/day]

Recent period drier relative to 18 year period