The Heat Warning System -SAC- is an innovative forecast tool on the national scene, carried out specially for dairy cows. Visiting the website http://www.cra-cma.it/sac/, farmers access to alert bioclimatic bulletins and to specific technical information in support to livestock management.

THE WEBSITE
Structured in several sections, it offers several information about forecast, monitoring, calculating THI and livestock management.

TIH FORECAST
From the SAC Home page it is possible to display heat warning forecast maps about productivity or mortality for the following six days.

THI RISK CLASSES
The heat stress risk during day and night time is represented by different colors, corresponding to four classes of THI values.

DATA AND METHODS
The forecasts system about heat warning is based on a bioclimatic index commonly used, the THI -Temperature Humidity Index-, that combine the simultaneous effects of both temperature and relative humidity to quantify the degree of heat stress in animals, using the commonly used formula elaborated by Kelly & Bond in 1971:

$$\text{THI} = (1.8 \times T + 32) \times (0.55 + 0.55 \times \text{RH/100}) \times (1.8 \times T + 32) - 58$$

where T = Air temperature (°C) and RH = Relative humidity (%)

The system provide six days forecast maps for Italy and each shows several THI hazard levels for welfare and production in dairy cows, for day and night time.

To forecast the THI, was used the forecast model DALAM (Data Assimilation Limited Area Model) that operates on a spatial domain which includes Western Europe and describes, through a series of primitive equation, atmosphere motion and thermodynamics and their temporal evolution, starting from input data supplied by the European Centre for Medium-Range Weather Forecasts - ECMWF. The Dalam provides forecast data of temperature and humidity which are the input for the calculation of the THI:

- Day time maps of THI are obtained from the forecast maximum daily temperature and relative humidity at 03.00 p.m.
- Night time maps of THI are obtained from the forecast minimum daily temperature and relative humidity at 03.00 a.m.

THI MONITORING
A section of website is dedicated to the monitoring of the territorial THI distribution in the last 10 days, giving the farmers an additional tool to control progress and evolution of THI values and to choose the most appropriate measures of mitigation, to reduce the discomfort on the animals.

REFERENCE