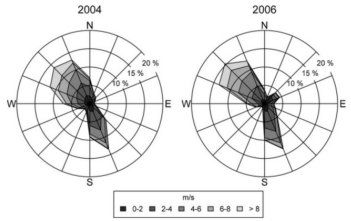
<table>
<tr><td>Libellé UE -Fr</td><td colspan="3">Évaporation: de la parcelle au bassin versant agricole</td><td rowspan="2">ECTS</td><td rowspan="2">2,5</td><td>Code UE -UM</td><td>GMST329</td></tr>
<tr><td>Libellé UE -En</td><td colspan="3">Evaporation processes from plot and landscape scales</td><td>Code ARVUS</td><td></td></tr>
<tr><td>Reponsable(s)</td><td>Laurent Prévot (INRA)</td><td>Etablissement(s) porteur(s)</td><td>UM (100%)</td><td>Intervenant(s)</td><td colspan="3">Laurent Prévot (INRA)
Jean-Paul Lhomme (INRA)
Armand Crabit (Supagro)</td></tr>
<tr><td>Objectif(s)</td><td colspan="7">The aim of this course is to provide the advanced understanding keys and modeling elements on green water and energy fluxes within the Soil-Plant-Atmosphere Continuum (SPAC) at the catchment scale.</td></tr>
<tr><td>Compétences visées</td><td colspan="7">• Knowledge skills : know conceptual methods and practical tools, in order to quantify plant water requirements. Modern observations techniques of evaporation parameters (eddy covariances, scintillometry and remotely sensed data) are introduced
• Practical skills : know practical tools (SPAC, Aquacrop) and their parameterization, in order to quantify plant water requirements</td></tr>
<tr><td>Contenu(s)</td><td colspan="4">This course focuses on surface-atmosphere water and energy fluxes observations and modeling, integrated in catchments or irrigated perimeters, to estimate and predict crops water needs and water stress in drought contexts. Attention is given to the effect of spatial heteorogenities on fluxes, from the plot scale to the catchment scale. Effects of topography on surface fluxes are also covered. The course contains two main steps :
1. Water and energy fluxes within the SPAC at the plot scale: review of basic concepts of micro-meteorology, modeling surface-atmosphere fluxes for homogeneous crops (“big-leaf” approach) and heterogeneous crops (multi-source approaches), coupling with soil water transfers in the rooting zone, water stress indicators at the plot scale
2. Water and energy fluxes within the SPAC at the catchment scale: spatial heterogeneity: advection integrating the fluxes, topographical effects on radiative and convective fluxes, water stress indicators at the catchment scale.</td><td colspan="3"> 

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<tr><td>Méthodes(s) pédagogique(s)</td><td colspan="7">All the theoretical lectures regularly alternate with a series of guided exercise sessions in the computer classroom, with Mediterranean case studies. In the computer classroom, the students will conduct a simplified sensitivity analysis of the ISBA surface-atmosphere model (MétéoFrance) in order to get an insight view of the relevant surface parameters with respect to surface-atmosphere fluxes. The Aquacrop model (FAO Irrigation and drainage) will be used to analyse the effect of water scarcity on crop production. Measurement techniques at the catchment scale will be illustrated during a visit to the Roujan site (ORE OMERE).</td></tr>
<tr><td rowspan="2">Langue(s) d'enseignement</td><td colspan="3" rowspan="2">Français</td><td>Nb H enseigt</td><td colspan="3">25h (12h cours ; 13 h TD/TP)</td></tr>
<tr><td>Nb H travail perso</td><td colspan="3">20</td></tr>
<tr><td>Modalités d'évaluation</td><td colspan="7">Contrôle terminal par examen écrit sans document (2h) (50%) et Contrôle continu (50%)</td></tr>
<tr><td>Bibliographie et MOOC(s)</td><td colspan="3">•</td><td>Pré-requis</td><td colspan="3">• UE « Eau et production végétale » (M1), UE « Hydrodynamique des sols » (M1), UE « Cycle de l’eau et BV » (M1), UE « Eau et Agriculture : enjeux « (M1)</td></tr>
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