



## XVII<sup>th</sup> World Congress of the International Commission of Agricultural and Biosystems Engineering (CIGR)

Hosted by the Canadian Society for Bioengineering (CSBE/SCGAB)  
Québec City, Canada June 13-17, 2010



### **INTEGRATED WATER SUPPLY MANAGEMENT AT WATERSHED SCALE FOR AGRICULTURAL PURPOSES IN A PERSPECTIVE OF ADAPTATION TO CLIMATE CHANGE**

JEAN-FRANÇOIS CYR<sup>1</sup>, RICHARD TURCOTTE<sup>2</sup>, CHARLES POIRIER<sup>3</sup>, DIANE  
CHAUMONT<sup>4</sup>

<sup>1</sup>Centre d'expertise hydrique du Québec, jean-francois.cyr@mddep.gouv.qc.ca

<sup>2</sup>Centre d'expertise hydrique du Québec, Richard.turcotte2@mddep.gouv.qc.ca

<sup>3</sup>Centre d'expertise hydrique du Québec, charles.poirier@mddep.gouv.qc.ca

<sup>4</sup>Consortium Ouranos, chaumont.diane@ouranos.ca

#### **CSBE100520 – Presented at Section I: Land and Water Engineering Conference**

**ABSTRACT** Among the hydrological effects that are expected from climate change impacts on the Southern area of province of Québec, the increase of summer temperatures, the consequent increase of the evapotranspiration, the disturbance of the rainfall regimes, as well as the decrease of summer low flows, are the ones which are the most susceptible to influence crop plants among which the productivity and the quality are significantly conditioned by an quantitatively and qualitatively appropriate water supply. This presentation exposes the results of two studies carried out by the Centre d'expertise hydrique du Québec (Québec Water Expertise Center) ( CEHQ), having been applied on two crop plants productions concerned by that situation, namely the case of vegetable farming in the Norton brook watershed and that of cranberry farming in Bécancour River watershed, both watersheds in the southern part of Québec. For these two types of crops, expected increase in irrigation needs and decrease of summer low flows, both due to climate change effects, are expected to amplify water stresses. Regarding good water management issues and sound approaches for its adaptation to expected climate change effects, these two studies show that a water supply management that would be integrated at the watershed scale and based on criteria that characterize seasonally the minimum required streamflows would be a good way to optimize water supply for crops productions while being focused on environmental protection objectives.

**Keywords:** climate, management, watershed, streamflows, supply