Sheet Flow Behavior

Sheet flow velocities were measured continuously at a fixed depth in the water column using acoustic Doppler current profilers (ADCP) located at site 3A-5 and at the adjacent inshore....

Point Flow Velocities

Ninety percent of flow velocities measured in the slough were between 0.11 and 0.56 cm/s with a mean of 0.31 cm/s and flow directions generally varied between south and southeast with a mean direction 15° east of due north (fig. 5A). On the ridge, ninety percent of flow velocities were between 0.06 and 0.54 cm/s with a mean of 0.28 cm/s and flow directions generally varied between south and southeast with a mean direction 135° east of due north (fig. 5B). The increase in flow velocity on October 24, 2005 was due to Hurricane Wilma. For periods of concurrent data, the mean flow velocity of 0.39 cm/s in the slough was 56% faster than the 0.29 cm/s mean velocity on the ridge.

Daily Mean Flow Velocities

Vectors representing daily mean flow velocities at the slough (A) and ridge (B) locations are shown in figure 6. Flow directions were southerly at the onset of monitoring at both locations and gradually shifted to the southwest in the slough and to the southeast on the ridge. Ninety percent of the daily means of all flow velocities were between 0.12 and 0.52 cm/s in the slough and 0.12 and 0.48 cm/s on the ridge. By contrast, ninety percent of the daily means of flow velocities measured at five wetland sites in Shark River Slough, Everglades National Park, from July 1999 to July 2003 were between 0.46 and 2.29 cm/s.

Vertical Velocity Profiles

Eight vertical velocity profiles were collected in the slough over a depth range of 48 cm (fig. 7A) and six were collected on the ridge over a depth range of 47 cm (fig. 7B). Mean flow velocities for the profile data ranged between 0.11 and 0.61 cm/s in the slough (table 1) and between 0.20 and 0.55 cm/s on the ridge (table 2). In the middle part of the wet season when water levels were high, mean flow velocities were similar at the ridge and slough and velocities were nearly uniform with depth. As water levels declined after Hurricane Wilma, mean flow velocities increased and velocities departed from uniform in the vertical at both locations. For all profiles, the maximum velocity on the ridge typically occurred about 10 cm above the surface of the layer whereas minimum velocities occurred within 10 cm of the surface in the slough. Velocities close to the top of the flow increased in the slough to 36% faster than depth-averaged velocities. High flow velocities at 20% of the velocity at 3A-5 on the ridge increased and velocities departed from uniform in the vertical at both locations. For all profiles, the maximum velocity on the ridge typically occurred about 10 cm above the surface of the layer whereas minimum velocities occurred within 10 cm of the surface in the slough. As water levels declined after Hurricane Wilma, mean flow velocities increased and velocities departed from uniform in the vertical at both locations.