Comment on "Indian Ocean: Validation of the Miami Isopycnic Coordinate Ocean Model and ENSO events during 1958–1998" by V. E. Haugen et al.

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[1] *Haugen et al.* [2002] used the Miami Isopycnic Coordinate Ocean Model (MICOM) to simulate the Indian Ocean circulation. A major result of *Haugen et al.* [2002] is the discovery of a new cyclonic gyre in the Bay of Bengal. In section 3.2.4 of their paper, which describes the seasonal cycle of Bay of Bengal circulation they discuss four gyres (G1, G2, G3, and G4). Among these, G4 (Figure 1), which is cyclonic, is claimed to be ''not previously reported.'' In their conclusion it is repeated that the gyre is ''previously unknown.'' (The direction of the gyre is stated to be anticyclonic in the abstract; this is incorrect.)

[2] This note is to bring to the notice of the readers of *Journal of Geophysical Research* that this cyclonic gyre has been previously discussed in literature. *Vinayachandran and Yamagata* [1998] (hereinafter referred to as VY) used a seasonal simulation by the GFDL Modular Ocean Model (MOM) to study three gyres in the Bay of Bengal. A cyclonic gyre east of Sri Lanka during summer, another cyclonic gyre in the southwestern Bay of Bengal during winter, and an anticyclonic gyre south of Sri Lanka during summer (Figure 2). The gyre called G4 by *Haugen et al.* [2002] is called Sri Lanka dome during summer and Bay of Bengal dome during winter by VY and is discussed extensively in their sections 3 and 4. The cyclonic gyre east of Sri Lanka during summer is also presented in the TOPEX/Poseidon analysis and model results of *Vinayachandran et al.* [1999]. Evidences for the cyclonic circulation during November is present in the model simulations of *McCreary et al.* [1993] and *McCreary et al.* [1996] and TOPEX/Poseidon data [*Eigenheer and Quadfasel*, 2000]. Hydrographic observations of *Shetye et al.* [1996] have captured the northwestern part of this cyclonic gyre.

[3] VY has shown that the cyclonic gyre east of Sri Lanka during summer is forced by local Ekman pumping and the cyclonic gyre during November is forced primarily by Ekman pumping. The forcing mechanisms of the Bay of Bengal circulation has been the subject of study by *McCreary et al.* [1996, and references therein] (also, see the review by *Schott and McCreary* [2001]). In their conclusion, however, *Haugen et al.* [2002] state that the ''gyre is clearly influenced by the strength of the Indian Monsoon current,'' without providing any evidence or justification.

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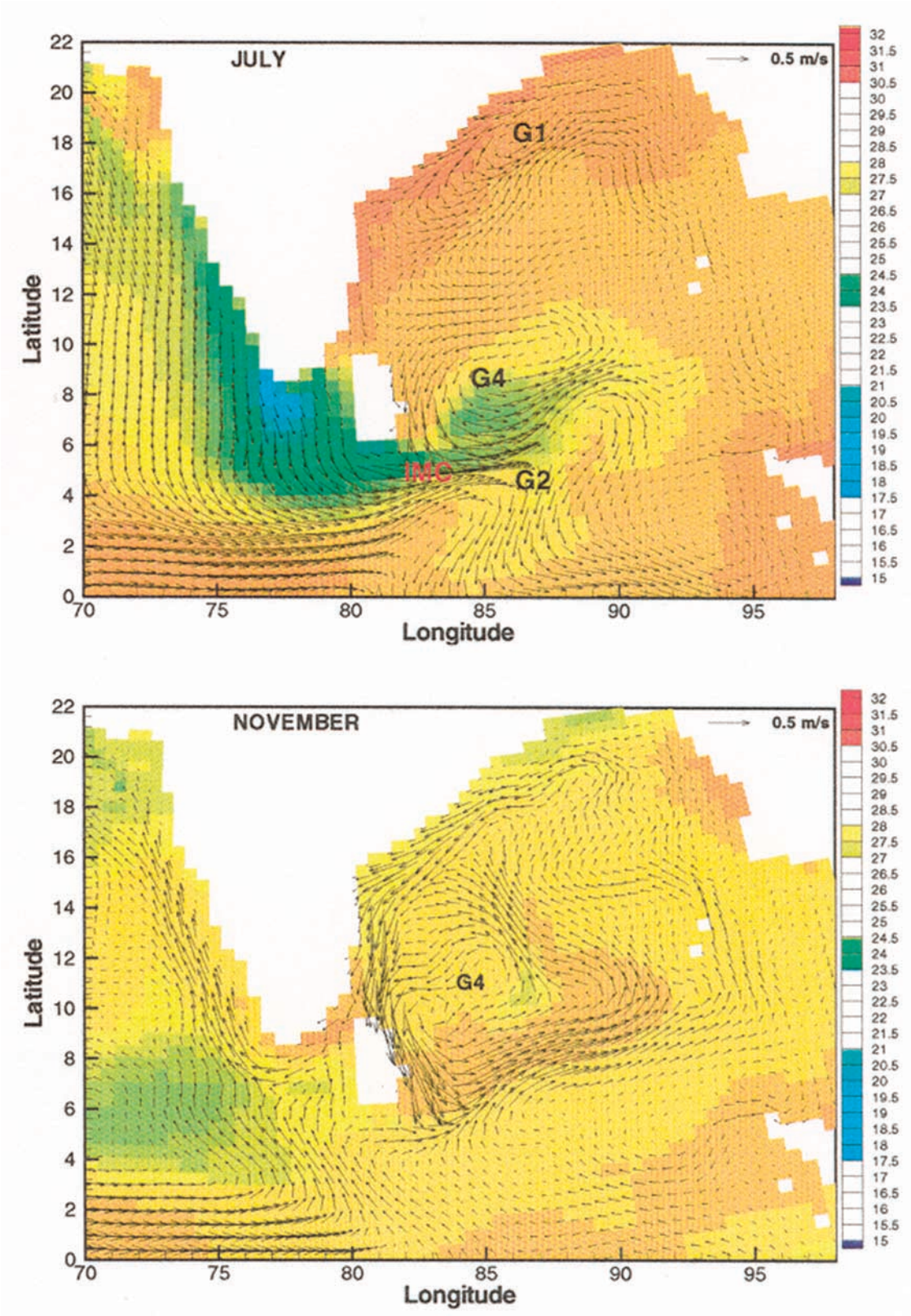

Figure 1. Circulation in the Bay of Bengal for the months of July and November from the model simulation of *Haugen et al.* [2002] [adapted from *Haugen et al.*, 2002, Figure 7].

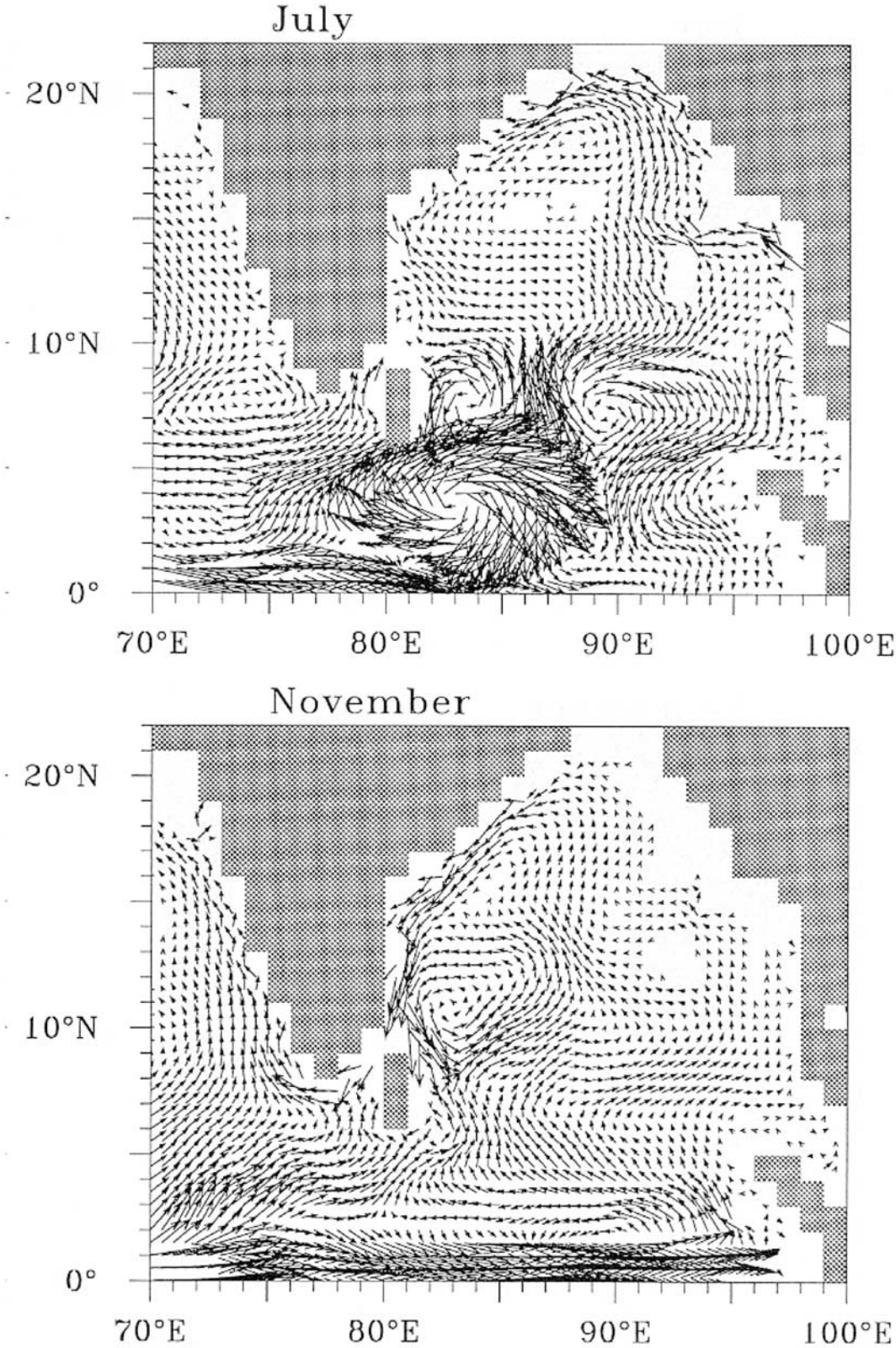

Figure 2. Circulation in the Bay of Bengal for the months of July and November from the model simulation of VY (adapted from VY, Figure 4).