The substorm onset arc is associated with an enhanced upward field-aligned current (FAC). To understand the current system just before and after substorm onset, it is essential to determine the location of the upward FAC relative to well-known region 1 and 2 FACs. We surveyed coordinated observations of the THEMIS all-sky imagers and the CHAMP magnetometer during the 2007-2009 winter seasons and selected events where CHAMP passed over onset arcs within 5 min after substorm expansion onset and compared to the current system prior to onset. We found that the upward FAC on the expansion arc extends over a wide local-time range (~21 to ~2 MLT) and is adjacent to the ordinary region 2 FAC in latitude: the upward FAC is located just poleward of the downward region 2 FAC on the premidnight sector, and is connected to the poleward boundary of the postmidnight upward region 2 FAC. In contrast, the upward FAC of the expansion arc is located further equatorward than the nightside region 1 FAC. The latitudinal current distribution is essentially unchanged from the late growth phase except for the current intensity. These results suggest that the current system enhanced at substorm onset is related to the region-2 system, which is connected to an enhanced pressure gradient in the near-Earth plasma sheet, rather than to the nightside region 1 system. We suggest that the onset upward FAC is a latitudinally narrow part of the postmidnight upward region 2 that extends poleward of the downward premidnight region 2 FAC.