Advection of momentum on primary cell edges

One method for momentum advection is outlined in Section 4; if an edge is perpendicular to $\mathbf{W}$, then the advective change of $\mathbf{A}$ may be integrated from the differential form $-\Delta t(w\partial\mathbf{A}/\partial\lambda + n\cos\phi\partial\mathbf{A}/\partial\phi)/R\cos\phi$. In this form, $\partial\mathbf{A}/\partial\lambda$ is assumed to be computed along a line of latitude which, in general, is not a great circle arc. If $\partial\mathbf{A}/\partial\lambda$ were computed using points on an arc that is the perpendicular bisector of the edge, then the derivative is not computed as though it lay along a line of latitude, but as though it lay along a great circle arc, basically an "equator". In this situation, $\cos\phi$ is discarded as 1 and the advective change of $\mathbf{A}$ is integrated from the form $-\Delta t(w\partial\mathbf{A}/\partial\xi + n\partial\mathbf{A}/\partial\phi)/R$ where ξ is the angular rotation coordinate running around the imagined "equator".