In this technical note, a distributed observer structure is proposed to estimate the states of a large scale network of semi-linear systems interconnected by a positive, time varying coupling strength. The distributed observer comprises distinct sub-observers which require only local node level information and exchange their local state estimates with their "neighboring" observers. The key idea here is to use a minimum number, or at least relatively few, measurements from the network being monitored to reduce the sensor requirements. The problem is formulated as a two stage LMI optimization problem.