We investigated Re-Os for whole rocks, sulfide, and metal from ordinary chondrites. Reproducible analyses for Re/Os in chondrites are obtained. Data on St. Séverin (LL6) show a large range in $^{187}$Re/$^{188}$Os (0.31-0.78) and in $^{187}$Os/$^{188}$Os (0.119-0.157). These results show an excellent correlation line on a $^{187}$Re-$^{188}$Os evolution diagram. If this is considered to represent an internal isochron, the St. Séverin data indicate $T=4.76\pm0.03$ AE and initial $^{187}$Os/$^{188}$Os ($I_0=0.0943\pm0.0003$). By comparison, irons[1] show a precise isochron ($T=4.62\pm0.01$ AE, $I_0=0.09563 \pm 0.00011$). The St. Séverin Re-Os age is distinctly older than that for irons (by $\sim140\pm30$ Ma) and older than the IVA and IVB irons (by $\sim110\pm30$ Ma). Whole rock and metal-rich separates of H-group chondrites [H3 to H6: Dhajala, Lost City, Ucera, Olmedilla, and Guareña] yield small ranges in $^{187}$Re/$^{188}$Os (0.42-0.47) and in $^{187}$Os/$^{188}$Os (0.128-0.133). From this we calculate ($^{187}$Re/$^{188}$Os)$_\text{CHUR} = 0.425$ and ($^{187}$Os/$^{188}$Os)$_\text{CHUR} = 0.1288$ for the chondritic evolution (CHUR) line, today. Metal-rich separates have 2-3x C$_{\text{Re}}$ and C$_{\text{Os}}$ than whole rocks, indicating that metal is the major Re-Os carrier. The chondrites plot close to the St. Séverin isochron; deviations of the chondrites from an isochron are larger (1%-10%) than deviations of the irons from their whole rock isochron (<3%). For St. Séverin, Rb-Sr systematics indicate a small isotopic redistribution[2]. St. Séverin sulfide shows a young Re-Os model age (2.3 AE) indicating more recent element redistribution. The low Re-Os concentrations indicate that this phase is not important for the Re-Os systematics of the whole rock and metal-rich samples.

The new results on chondrites indicate that Re-Os fractionation events occurred very early in the solar system. As the predominant phase containing these elements is FeNi, this implies Re-Os fractionation between different pieces of metal in each meteorite; this could be the result of nebular processes, prior to or during accretion of the chondritic material or the result of fractionation between metal and S-rich metal liquids in the chondrite parent bodies. We infer that the metal phases in stony meteorites have undergone melting and crystallization that produced the observed range in Re/Os and the apparent isochronous relations. Shock or nebular processes have also been suggested for siderophile element fractionation[3].