The present study investigates conversion of char-N to NO in mixtures of O$_2$/N$_2$ and in O$_2$/H$_2$O/N$_2$. Biomass particles of spruce bark were combusted in an electrically heated single particle reactor at 900°C at various O$_2$/H$_2$O/N$_2$ concentrations. NO concentrations of the product gases were measured during the char combustion stage. The conversion of char-N to NO was significantly higher with H$_2$O as compared to without H$_2$O in the gas. Additional fixed bed experiments were conducted to investigate the products of the reaction between H$_2$O and spruce bark char. The results showed that NH$_3$ is the primary product in the reaction between char-N and steam. These results explain the observation that more NO is formed during char combustion in the presence of steam: the char-N reacts partly with H$_2$O to form NH$_3$, which reacts further to NO.

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