We have studied the morphology, abundances and kinematics of different species towards the Sgr A complex and the line-of-sight spiral arm features. Strong OH absorption, H$_2$O emission and absorption lines were seen at all observed positions, and the H$_2^{16}$O line was detected in absorption towards the +20 and +50 km s$^{-1}$ clouds, the CND, the expanding molecular ring, and the 3-kpc arm. Strong CO, C$^{18}$O and neutral carbon C$_18$O emissions were seen towards the +20 and +50 km s$^{-1}$ clouds. NH$_3$ was detected in weak absorption only originating in the line-of-sight spiral arm features.

The abundances of OH and H$_2$O indicate that shocks and star formation prevail in the +50 km s$^{-1}$ cloud, and also in the CND where cloud collisions are frequent, and furthermore that the CND is subject to intense UV-radiation emanating from the supermassive black hole and the central star cluster. The CND is rich in H$_2$O and OH, and these abundances are considerably higher than those in the surrounding clouds. It is likely that PDR chemistry including grain surface reactions, and perhaps also the influences of the molecular species studied here, in the redward high-velocity line wings of both the +20 and +50 km s$^{-1}$ clouds and the CND, the H$_2$O abundances are estimated to be similar to the water abundances in outflows of the Orion KL and DR21 molecular clouds, which are said to be caused by the combined action of shock desorption from icy grain mantles and high-temperature, gas-phase shock chemistry.

The compact HII region D, in the eastern part of the +50 km s$^{-1}$ cloud, was observed in OH absorption at velocities between 32 and 59 km s$^{-1}$. In the C$^{18}$O J = 2 − 1 line it was observed at velocities between about 35 and 54 km s$^{-1}$ with two velocity components, which may indicate a bipolar outflow in this region.

The basis for this poster is a paper that recently was published in Astronomy & Astrophysics, vol. 554, A141 (2013). The paper has Open Access status.