Abstract
From 1994 to 2007 six campaigns with a total of twenty-four VLBA Calibrator Survey (VCS) observing sessions (each 24 h long) were carried out with ten radio telescopes in North America. The primary goal of those sessions was the densification of the celestial reference frames. We show that Earth Orientation Parameters (EOP) estimates from the VCS network experience a large (up to 4 mas) offset w.r.t. the C04 08 time series which is due to the regionality of the network. Source coordinate estimates are different at the mas level when a solution were EOP are fixed to the C04 08 time series is compared with the general approach were EOP are estimated. Furthermore, we conducted simulations which indicate the propagation of errors (rate and offset) of EOP into source coordinates. An error of 1/15 ms/day in dUT1 propagates directly into the right ascension (RA) estimates and an error of 1 mas/day in y-pol propagates directly into the declination (DE) estimates when EOP are not estimated. However, when EOP are estimated the corrections are about 0.02 mas and 0.01 mas for errors in dUT1 and y-pol respectively.

VCS schedule
The scheduling of observations was conducted using two different strategies. Early VCS sessions (VCS1) were scheduled using one declination stripe and piece-wise observations on a meridian. In the VCS2 – VCS6 campaigns observations on a constant meridian were scheduled. However, the declination of observed sources is spread more evenly between -45° and 90°.

Estimate EOP from VCS
Estimating EOP from VCS sessions results in large (up to 4 mas) offsets w.r.t. the C04 08 a priori time series. This is due to the network being regional and not suitable for precise EOP estimation.

Time series of EOP estimates over all VCS session

RMS of the EOP estimates w.r.t. the C04 08 time series

<table>
<thead>
<tr>
<th></th>
<th>x-pol</th>
<th>y-pol</th>
<th>dUT1</th>
<th>dX</th>
<th>dY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Error</td>
<td>0.95</td>
<td>1.31</td>
<td>0.11</td>
<td>0.34</td>
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</tbody>
</table>

VCS sessions
The VCS sessions were observed with ten radio telescopes between 1994 and 2007. In total twenty-four sessions which were divided into six campaigns were schedules observing more than 2000 new sources. The network is regional and consists of stations in North America.

Estimate source coord.
We computed two solutions. One where source coordinates and EOP are estimated alongside and one where EOP are fixed to the C04 08 time series. The difference is depicted for two of the VCS sessions. We obtained systematic differences reaching up to 1 mas.

Simulations
Errors in the EOP time series were simulated:
- Error in y-pol rate of 1 mas /day:
  ![Graph showing error in y-pol rate of 1 mas/day]
- Error in dUT1 rate of 1/15 ms /day:
  ![Graph showing error in dUT1 rate of 1/15 ms/day]
- Errors in other EOP and other error types, such as offsets, were also investigated.

Error of 1 mas rate/day in y-pol
Propagates into DE estimates with 1 mas/day if EOP are not estimated and causes corrections of up to 0.01 mas in RA when EOP are estimated.

Error of 1/15 ms rate/day in dUT1
Propagates into RA estimates with 1 mas/day if EOP are not estimated and causes corrections of up to 0.02 mas in RA when EOP are estimated.