Heterotrophic Bacterial Production

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Cruise prep, rad logistics, DNA precipitation (ALOHA), data analysis

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Incubations (ALOHA)

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Incubations, DNA precipitation (K2)
Thymidine incorporation rates

1. add $^3$H-thymidine
2. incubate
3. precipitate DNA by TCA/filtration
4. radioactivity by scint. counting

Thymidine Incorporation Rate

$^3$H-thymidine precursor of thymine (i.e. “T”)
Thymidine incorporation rates

\[ b_{100} = -1.1 \]
Thymidine incorporation rates

\[ b_{100} = -1.2 \]
Thymidine incorporation rates
Heterotrophic bacterial production rates

Estimated conversion factors

\[\text{Thymidine Incorporation Rate} \times \frac{\text{cell}}{\text{thymidine}} \times \frac{\text{g carbon}}{\text{cell}} = \text{Carbon Incorporation Rate}\]

\[\pm 30\%\]

Disclaimer: thymidine and leucine incorporation rates may underestimate bacterial production rates, particularly in gyres.
Heterotrophic bacterial production rates
### Heterotrophic bacterial production rates

<table>
<thead>
<tr>
<th></th>
<th>mg C l(^{-1}) d(^{-1})</th>
<th>(\text{BP}_{50\text{m}}) (mg C m(^{-2}) d(^{-1}))</th>
<th>(\text{PP}_{50\text{m}}) (mg C m(^{-2}) d(^{-1}))</th>
<th>BP:PP</th>
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</thead>
<tbody>
<tr>
<td><strong>ALOHA</strong></td>
<td>28 ± 9</td>
<td>197 ± 29</td>
<td>0.14 ± 0.05</td>
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<tr>
<td><strong>K2</strong></td>
<td>23 ± 10</td>
<td>467 ± 123</td>
<td>0.05 ± 0.03</td>
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