```
Needs["ErrorBarPlots`"];
Needs["CustomTicks`"];
Needs["PolygonPlotMarkers`"];
```

```
dataCH4 = ImportString["CH4 flow / sccm\tscaled mean\tscaled error

CH B-X ?/3/500\t\t
0\t0\t0
0.5\t0.81127074\t0.073742704
1\t1.367450511\t0.085823107
1.5\t1.498042763\t0.142700806
2\t1.598721118\t0.16880819
2.5\t1.827358096\t0.179961877
3\t1.91361675\t0.177231757
4\t2.052295677\t0.179211519
6\t2.342442953\t0.172481078
8\t2.456069454\t0.185217373

CN B-X ?/3/500\t\t
0\t0.05071348\t0.02429805
0.5\t0.283985183\t0.032407471
1\t0.386263552\t0.04399861
1.5\t0.450650928\t0.051079405
2\t0.470995964\t0.053160455
2.5\t0.502227625\t0.056163807
3\t0.493990689\t0.055666535
4\t0.520544813\t0.058365252
6\t0.539328937\t0.06085273
8\t0.53662044\t0.060421108

NH A-X ?/15/500\t\t
0\t2.154288895\t0.154104744
0.5\t1.70666913\t0.11996503
1\t1.192010556\t0.090590167
1.5\t1.00990453\t0.089212999
2\t0.809558628\t0.0768204
3\t0.615650909\t0.055635886
4\t0.479578672\t0.050823966
6\t0.360189357\t0.031581885
8\t0.268745968\t0.041879532
", "TSV"];
```

```
TableForm[dataCH4, TableHeadings → {Range@Length[dataCH4], None}]
```

1	CH4 flow / sccm	scaled mean	scaled error
2			
3	CH B–X ?/3/500		
4	0	0	0
5	0.5	0.811271	0.0737427
6	1	1.36745	0.0858231
7	1.5	1.49804	0.142701
8	2	1.59872	0.168808
9	2.5	1.82736	0.179962
10	3	1.91362	0.177232
11	4	2.0523	0.179212
12	6	2.34244	0.172481
13	8	2.45607	0.185217
14			
15	CN B–X ?/3/500		
16	0	0.0507135	0.0242981
17	0.5	0.283985	0.0324075
18	1	0.386264	0.0439986
19	1.5	0.450651	0.0510794
20	2	0.470996	0.0531605
21	2.5	0.502228	0.0561638
22	3	0.493991	0.0556665
23	4	0.520545	0.0583653
24	6	0.539329	0.0608527
25	8	0.53662	0.0604211
26			
27	NH A–X ?/15/500		
28	0	2.15429	0.154105
29	0.5	1.70667	0.119965
30	1	1.19201	0.0905902
31	1.5	1.0099	0.089213
32	2	0.809559	0.0768204
33	3	0.615651	0.0556359
34	4	0.479579	0.050824
35	6	0.360189	0.0315819
36	8	0.268746	0.0418795

```
CHbxCH4 = dataCH4〚5 ;; 13〛 /. {f_, y_, err_} ⧴ {{100. * f / (f + 500 + 3), y}, ErrorBar[err]}
```

```
{{{0.0993049, 0.811271}, ErrorBar[0.0737427]},
 {{0.198413, 1.36745}, ErrorBar[0.0858231]}, {{0.297324, 1.49804}, ErrorBar[0.142701]},
 {{0.39604, 1.59872}, ErrorBar[0.168808]}, {{0.49456, 1.82736}, ErrorBar[0.179962]},
 {{0.592885, 1.91362}, ErrorBar[0.177232]}, {{0.788955, 2.0523}, ErrorBar[0.179212]},
 {{1.17878, 2.34244}, ErrorBar[0.172481]}, {{1.56556, 2.45607}, ErrorBar[0.185217]}}
```

```
CNcorrection = 1.056471319;
```

```
CNbxCH4 = dataCH4〚16 ;; 25〛 /.
  {f_, y_, err_} ⧴ {{100. * f / (f + 500 + 3), CNcorrection 3 y}, ErrorBar[CNcorrection 3 err]}
```

```
{{{0., 0.160732}, ErrorBar[0.0770106]}, {{0.0993049, 0.900067}, ErrorBar[0.102713]},
 {{0.198413, 1.22423}, ErrorBar[0.13945]}, {{0.297324, 1.4283}, ErrorBar[0.161892]},
 {{0.39604, 1.49278}, ErrorBar[0.168487]}, {{0.49456, 1.59177}, ErrorBar[0.178006]},
 {{0.592885, 1.56566}, ErrorBar[0.17643]}, {{0.788955, 1.64982}, ErrorBar[0.184984]},
 {{1.17878, 1.70936}, ErrorBar[0.192867]}, {{1.56556, 1.70077}, ErrorBar[0.1915]}}
```

Fig 6.nb | **3**

```
NHaxCH4 = dataCH4〚28 ;; 36〛 /. {f_, y_, err_} :> {{100. * f / (f + 500 + 15), y}, ErrorBar[err]}
```

```
{{{0., 2.15429}, ErrorBar[0.154105]}, {{0.0969932, 1.70667}, ErrorBar[0.119965]},
 {{0.193798, 1.19201}, ErrorBar[0.0905902]}, {{0.290416, 1.0099}, ErrorBar[0.089213]},
 {{0.386847, 0.809559}, ErrorBar[0.0768204]},
 {{0.579151, 0.615651}, ErrorBar[0.0556359]},
 {{0.770713, 0.479579}, ErrorBar[0.050824]},
 {{1.15163, 0.360189}, ErrorBar[0.0315819]}, {{1.52964, 0.268746}, ErrorBar[0.0418795]}}
```

```
plotCH4 = ErrorListPlot[{CHbxCH4, NHaxCH4, CNbxCH4}, Joined → False,
  PlotRange → {{0, All}, {0, 3}},
  PlotRangePadding → {{Scaled[0.05], Scaled[0.05]}, {None, None}},
  PlotStyle → {Cyan, Purple, Blue},
  PlotMarkers → {
    Graphics[{FaceForm[Cyan], EdgeForm@Directive[Cyan, AbsoluteThickness[0.5]],
      PolygonMarker["Cross", Scaled[0.0225]]}],
    Graphics[{FaceForm[Purple], EdgeForm@Directive[Purple, AbsoluteThickness[0.5]],
      PolygonMarker["DownTriangle", Scaled[0.02]]}],
    Graphics[{FaceForm[Blue], EdgeForm@Directive[Blue, AbsoluteThickness[0.5]],
      PolygonMarker["DiagonalSquare", Scaled[0.025]]}]
   },
  Frame → True,
  FrameStyle → {
    {
     Directive[AbsoluteThickness[0.5], Black],
     Directive[AbsoluteThickness[0.5], Blue]
    }, {
     Directive[AbsoluteThickness[0.5], Black],
     Directive[AbsoluteThickness[0.5], Black]
    }
   },
  FrameTicks → {
    {
     Automatic,
     (* CN tripled *)
     LinTicks[0, 1, TickPostTransformation → (3 # &),
      MajorTickLength → 0.014`, MinorTickLength → 0.008`]
    }, {
     Automatic,
     All
    }
   },
  FrameLabel → {
    {
     Row[
      {"{", Style["CH(v = 0)", Cyan], "; ", Style["NH(v = 0)", Purple], "} /10^12 cm^-2"}],
     Style["{CN(v = 0)} /10^12 cm^-2", Blue]
    },
    {None, "X_0(CH_4)  (%)"}
   },
  ImagePadding → {{32, Automatic}, {6, Automatic}}, AspectRatio → Full
 ]
```
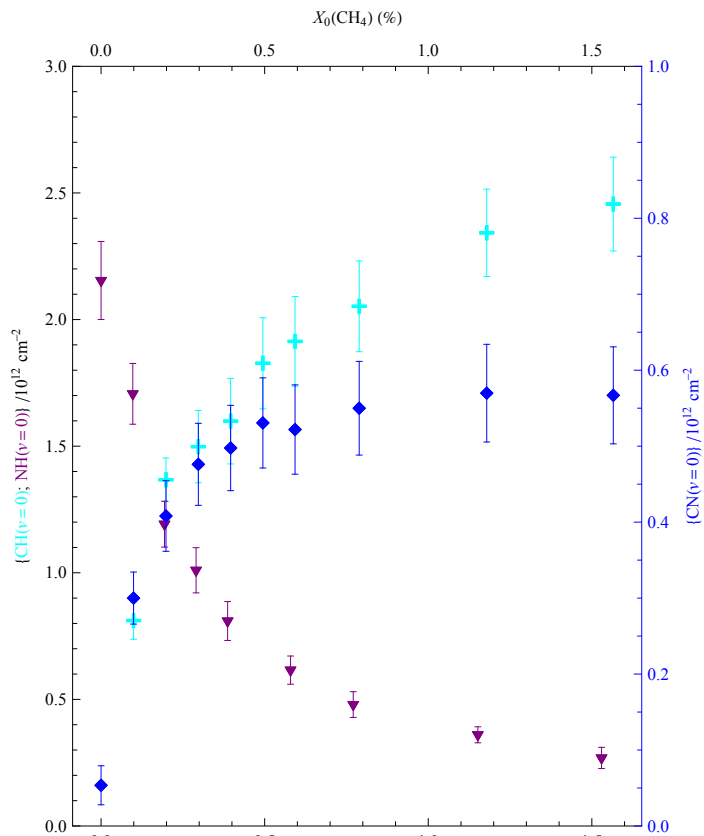
```
CHcalcCH4 = {{0.4, 1.89}, {4, 3.62}} /. {pct : Except[_List], y : Except[_List]} ⧴ {pct, y}

{{0.4, 1.89}, {4, 3.62}}

CNcalcCH4 =
 {{0.4, 0.528}, {4, 0.591}} /. {pct : Except[_List], y : Except[_List]} ⧴ {pct, 3 y}

{{0.4, 1.584}, {4, 1.773}}

NHcalcCH4 = {{0, 2.29}, {0.4, 0.988}} /. {pct : Except[_List], y : Except[_List]} ⧴ {pct, y}

{{0, 2.29}, {0.4, 0.988}}

plotCH4calc = ListPlot[{CHcalcCH4, NHcalcCH4, CNcalcCH4}, Joined → False,
   PlotRange → Full,
   PlotMarkers → {
     Graphics[{FaceForm[White], EdgeForm@Directive[Cyan, AbsoluteThickness[0.75]],
       PolygonMarker["Cross", Scaled[0.03]]}],
     Graphics[{FaceForm[White], EdgeForm@Directive[Purple, AbsoluteThickness[1.0]],
       PolygonMarker["DownTriangle", Scaled[0.025]]}],
     Graphics[{FaceForm[White], EdgeForm@Directive[Blue, AbsoluteThickness[1.0]],
       PolygonMarker["DiagonalSquare", Scaled[0.03]]}]
     },
   Axes → False
   ];
```

Fig 6.nb | **5**

```
dataN2 = ImportString["N2 flow / sccm\tscaled mean\tscaled error

CH B-X 20/?/500\t\t
0\t2.335452638\t0.112383634
0.5\t3.011319261\t0.232644524
1\t3.107669615\t0.187414591
1.5\t3.406885546\t0.247026001
2\t3.379098191\t0.193408947
3\t3.615195016\t0.215152729
4\t3.501617905\t0.199795551
5\t3.598435319\t0.138103998
7\t3.684818837\t0.214419994

CN B-X 20/?/500\t\t
0\t0\t0
0.5\t0.078158137\t0.009762235
1\t0.158595305\t0.018718412
1.5\t0.256538623\t0.029751745
2\t0.362741919\t0.04141447
3\t0.524395923\t0.059501372
4\t0.673642079\t0.076706576
5\t0.858028607\t0.097254099
7\t1.052260983\t0.121436172
", "TSV"];
```

```
TableForm[dataN2, TableHeadings → {Range@Length[dataN2], None}]
```

```
1     N2 flow / sccm     scaled mean    scaled error
2
3     CH B-X 20/?/500
4     0                  2.33545        0.112384
5     0.5                3.01132        0.232645
6     1                  3.10767        0.187415
7     1.5                3.40689        0.247026
8     2                  3.3791         0.193409
9     3                  3.6152         0.215153
10    4                  3.50162        0.199796
11    5                  3.59844        0.138104
12    7                  3.68482        0.21442
13
14    CN B-X 20/?/500
15    0                  0              0
16    0.5                0.0781581      0.00976224
17    1                  0.158595       0.0187184
18    1.5                0.256539       0.0297517
19    2                  0.362742       0.0414145
20    3                  0.524396       0.0595014
21    4                  0.673642       0.0767066
22    5                  0.858029       0.0972541
23    7                  1.05226        0.121436
```

```
CHbxN2 = dataN2〚4 ;; 12〛 /. {f_, y_, err_} ⧴ {{100. * f / (f + 20 + 500), y}, ErrorBar[err]}
```

```
{{{0., 2.33545}, ErrorBar[0.112384]},
 {{0.0960615, 3.01132}, ErrorBar[0.232645]}, {{0.191939, 3.10767}, ErrorBar[0.187415]},
 {{0.287632, 3.40689}, ErrorBar[0.247026]}, {{0.383142, 3.3791}, ErrorBar[0.193409]},
 {{0.573614, 3.6152}, ErrorBar[0.215153]}, {{0.763359, 3.50162}, ErrorBar[0.199796]},
 {{0.952381, 3.59844}, ErrorBar[0.138104]}, {{1.32827, 3.68482}, ErrorBar[0.21442]}}
```

```
CNcorrection = 1.056471319;
CNbxN2 = dataN2〚16 ;; 23〛 /. {f_, y_, err_} ⧴
    {{100. * f / (f + 20 + 500), CNcorrection 4 / 1.6 y}, ErrorBar[CNcorrection 4 / 1.6 err]}
```

```
{{{0.0960615, 0.20643}, ErrorBar[0.0257838]},
 {{0.191939, 0.418878}, ErrorBar[0.0494387]},
 {{0.287632, 0.677564}, ErrorBar[0.0785797]},
 {{0.383142, 0.958066}, ErrorBar[0.109383]},
 {{0.573614, 1.38502}, ErrorBar[0.157154]}, {{0.763359, 1.77921}, ErrorBar[0.202596]},
 {{0.952381, 2.26621}, ErrorBar[0.256865]}, {{1.32827, 2.77921}, ErrorBar[0.320735]}}
```

```
plotN2 = ErrorListPlot[{CHbxN2, CNbxN2}, Joined → False,
  PlotRange → {{0, All}, {0, 4.2}},
  PlotRangePadding → {{Scaled[0.05], Scaled[0.05]}, {None, None}},
  PlotStyle → {Cyan, Blue},
  PlotMarkers → {
    Graphics[{FaceForm[Cyan], EdgeForm@Directive[Cyan, AbsoluteThickness[0.5]],
      PolygonMarker["Cross", Scaled[0.0225]]}],
    Graphics[{FaceForm[Blue], EdgeForm@Directive[Blue, AbsoluteThickness[0.5]],
      PolygonMarker["DiagonalSquare", Scaled[0.025]]}]
    },
  Frame → True,
  FrameStyle → {
    {
     Directive[AbsoluteThickness[0.5], Cyan],
     Directive[AbsoluteThickness[0.5], Blue]
    }, {
     Directive[AbsoluteThickness[0.5], Black],
     Directive[AbsoluteThickness[0.5], Black]
    }
    },
  FrameTicks → {
    {
     Automatic,
     (* CN scaled by 4/1.6 *)
     LinTicks[0, 1.6, TickPostTransformation → (4 / 1.6 # &),
      MajorTickLength → 0.014`, MinorTickLength → 0.008`]
    }, {
     Automatic,
     Automatic
    }
    },
  FrameLabel → {
    {
     Style["{CH(v = 0)} /10^12 cm^-2", Cyan],
     Style["{CN(v = 0)} /10^12 cm^-2", Blue]
    },
    {Style["X_0(N_2)  (%)", SingleLetterItalics → False], None}
    },
  ImagePadding → {{32, Automatic}, {Automatic, Automatic}}, AspectRatio → Full
  ]
```

Fig 6.nb | **7**
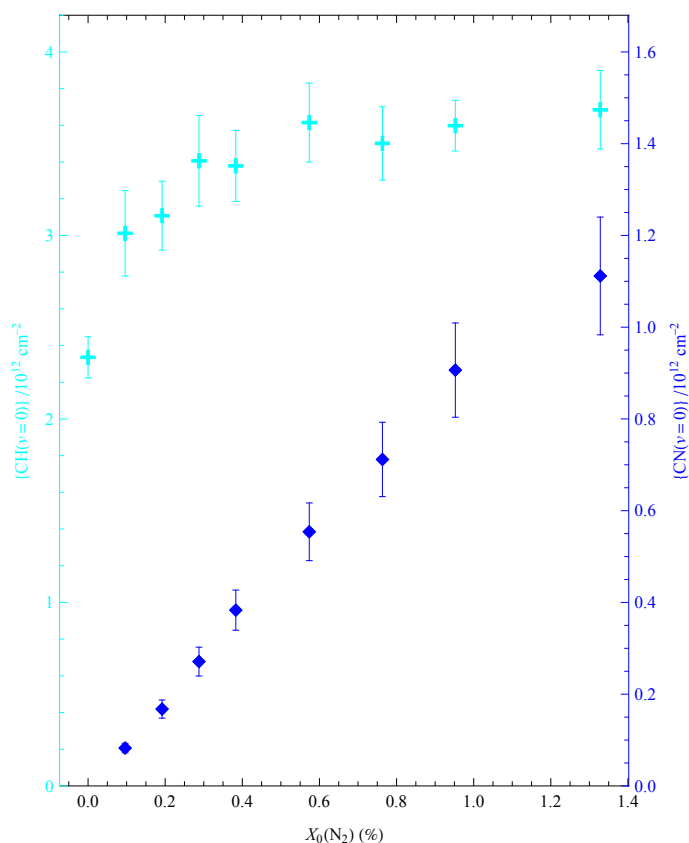

```
CHcalcN2 = {{0.1, 3.71}, {0.6, 3.62}, {1.2, 3.85}} /.
   {pct : Except[_List], y : Except[_List]} ⧴ {pct, y}
```

```
{{0.1, 3.71}, {0.6, 3.62}, {1.2, 3.85}}
```

```
CNcalcN2 = {{0.1, 0.0923}, {0.6, 0.591}, {1.2, 1.39}} /.
   {pct : Except[_List], y : Except[_List]} ⧴ {pct, 4 / 1.6 y}
```

```
{{0.1, 0.23075}, {0.6, 1.4775}, {1.2, 3.475}}
```

```
plotN2calc = ListPlot[{CHcalcN2, CNcalcN2}, Joined → False,
    PlotRange → Full,
    PlotMarkers → {
      Graphics[{FaceForm[White], EdgeForm@Directive[Cyan, AbsoluteThickness[0.75]],
        PolygonMarker["Cross", Scaled[0.03]]}],
      Graphics[{FaceForm[White], EdgeForm@Directive[Blue, AbsoluteThickness[1.0]],
        PolygonMarker["DiagonalSquare", Scaled[0.03]]}]
      },
    Axes → False
   ];
```

```
plot = GraphicsGrid[{
    {Show[{plotCH4, plotCH4calc}, Sequence @@ AbsoluteOptions[plotCH4, PlotRange]]},
    {Show[{plotN2, plotN2calc}, Sequence @@ AbsoluteOptions[plotN2, PlotRange]]}
  },
  Spacings → 0,
  ImagePadding → {{None, None}, {Automatic, Automatic}}, PlotRangePadding → None,
  AspectRatio → Full, ImageSize → {8.25 * 72 / 2.54, 12.375 * 72 / 2.54},
  BaseStyle → {PrivateFontOptions → {"OperatorSubstitution" → False}}
 ]
```
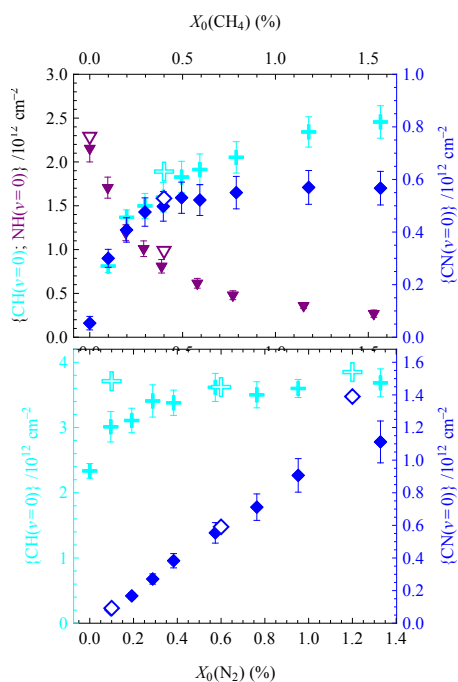


```
(* MUST export it in EPS format. No other formats work correctly.
   Alternative is to save a PDF and then open
  it in Drawplus rather than attempting to paste. *)
SetDirectory@NotebookDirectory[];
Export["plotmma.pdf", plot, "PDF"]
```

plotmma.pdf